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(54) **THERAPEUTIC AGENTS USEFUL FOR TREATING PAIN**

ZUR BEHANDLUNG VON SCHMERZEN GEEIGNETE THERAPEUTISCHE MITTEL
AGENTS THERAPEUTIQUES UTILES POUR TRAITER LA DOULEUR

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(56) References cited:
EP-A- 0 533 267 **WO-A2-20/04056774**
GB-A- 2 276 162 **GB-A- 2 276 163**

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Description

[0001] The present invention relates to Pyridylene Compounds, compositions comprising an effective amount of a Pyridylene Compound and methods for treating or preventing a Condition such as pain comprising administering to an animal in need thereof an effective amount of a Pyridylene Compound.

[0002] Pain is the most common symptom for which patients seek medical advice and treatment. Pain can be acute or chronic. While acute pain is usually self-limited, chronic pain persists for 3 months or longer and can lead to significant changes in a patient's personality, lifestyle, functional ability and overall quality of life (K.M. Foley, Pain, in Cecil Textbook of Medicine 100-107 (J.C. Bennett and F. Plum eds., 20th ed. 1996)).

[0003] Moreover, chronic pain can be classified as either nociceptive or neuropathic. Nociceptive pain includes tissue injury-induced pain and inflammatory pain such as that associated with arthritis. Neuropathic pain is caused by damage to the peripheral or central nervous system and is maintained by aberrant somatosensory processing. There is a large body of evidence relating activity at both Group I mGluRs (mGluR1 and mGluR5) (M.E. Fundytus, CNS Drugs 15:29-58 (2001)) and vanilloid receptors (VR1) (V. Di Marzo et al., Current Opinion in Neurobiology 12:372-379 (2002)) to pain processing. Inhibiting mGluR1 or mGluR5 reduces pain, as shown by *in vivo* treatment with antibodies selective for either mGluR1 or mGluR5, where neuropathic pain in rats was attenuated (M.E. Fundytus et al., NeuroReport 9:731-735 (1998)). It has also been shown that antisense oligonucleotide knockdown of mGluR1 alleviates both neuropathic and inflammatory pain (M.E. Fundytus et al., British Journal of Pharmacology 132:354-367 (2001); M.E. Fundytus et al., Pharmacology, Biochemistry & Behavior 73:401-410 (2002)). Small molecule antagonists for mGluR5-attenuated pain in *in vivo* animal models are disclosed in, e.g., K. Walker et al., Neuropharmacology 40:1-9 (2000) and A. Dogrul et al., Neuroscience Letters 292:115-118 (2000)).

[0004] Nociceptive pain has been traditionally managed by administering non-opioid analgesics, such as acetylsalicylic acid, choline magnesium trisalicylate, acetaminophen, ibuprofen, fenoprofen, diflusal, and naproxen; or opioid analgesics, including morphine, hydromorphone, methadone, levorphanol, fentanyl, oxycodone, and oxymorphone. *Id.* In addition to the above-listed treatments, neuropathic pain, which can be difficult to treat, has also been treated with anti-epileptics (e.g., gabapentin, carbamazepine, valproic acid, topiramate, phenytoin), NMDA antagonists (e.g., ketamine, dextromethorphan), topical lidocaine (for post-herpetic neuralgia), and tricyclic antidepressants (e.g., fluoxetine, sertraline and amitriptyline).

[0005] Pain has been traditionally managed by administering non-opioid analgesics, such as acetylsalicylic acid, choline magnesium trisalicylate, acetaminophen, ibuprofen, fenoprofen, diflusal, and naproxen; or opioid analgesics, including morphine, hydromorphone, methadone, levorphanol, fentanyl, oxycodone, and oxymorphone. *Id.*

[0006] Urinary incontinence ("UI") is uncontrollable urination, generally caused by bladder-detrusor-muscle instability. UI affects people of all ages and levels of physical health, both in health care settings and in the community at large. Physiologic bladder contraction results in large part from acetylcholine-induced stimulation of post-ganglionic muscarinic-receptor sites on bladder smooth muscle. Treatments for UI include the administration of drugs having bladder-relaxant properties, which help to control bladder-detrusor-muscle overactivity. For example, anticholinergics such as propantheline bromide and glycopyrrolate, and combinations of smooth-muscle relaxants such as a combination of racemic oxybutynin and dicyclomine or an anticholinergic, have been used to treat UI (See, e.g., A.J. Wein, Urol. Clin. N. Am. 22:557-577 (1995); Levin et al., J. Urol. 128:396-398 (1982); Cooke et al., S. Afr. Med. J. 63:3 (1983); R.K. Mirakhur et al., Anaesthesia 38:1195-1204 (1983)). These drugs are not effective, however, in all patients having uninhibited bladder contractions. Administration of anticholinergic medications represent the mainstay of this type of treatment.

[0007] None of the existing commercial drug treatments for UI has achieved complete success in all classes of UI patients, nor has treatment occurred without significant adverse side effects. For example, drowsiness, dry mouth, constipation, blurred vision, headaches, tachycardia, and cardiac arrhythmia, which are related to the anticholinergic activity of traditional anti-UI drugs, can occur frequently and adversely affect patient compliance. Yet despite the prevalence of unwanted anticholinergic effects in many patients, anticholinergic drugs are currently prescribed for patients having UI. The Merck Manual of Medical Information 631-634 (R. Berkow ed., 1997).

[0008] About 1 in 10 people develop an ulcer. Ulcers develop as a result of an imbalance between acid-secretory factors, also known as "aggressive factors," such as stomach acid, pepsin, and *Helicobacter pylori* infection, and local mucosal-protective factors, such as secretion of bicarbonate, mucus, and prostaglandins.

[0009] Treatment of ulcers typically involves reducing or inhibiting the aggressive factors. For example, antacids such as aluminum hydroxide, magnesium hydroxide, sodium bicarbonate, and calcium bicarbonate can be used to neutralize stomach acids. Antacids, however, can cause alkalosis, leading to nausea, headache, and weakness. Antacids can also interfere with the absorption of other drugs into the blood stream and cause diarrhea.

[0010] H₂ antagonists, such as cimetidine, ranitidine, famotidine, and nizatidine, are also used to treat ulcers. H₂ antagonists promote ulcer healing by reducing gastric acid and digestive-enzyme secretion elicited by histamine and other H₂ agonists in the stomach and duodenum. H₂ antagonists, however, can cause breast enlargement and impotence in men, mental changes (especially in the elderly), headache, dizziness, nausea, myalgia, diarrhea, rash, and fever.

[0011] H⁺, K⁺ -ATPase inhibitors such as omeprazole and lansoprazole are also used to treat ulcers. H⁺, K⁺ -ATPase inhibitors inhibit the production of enzymes used by the stomach to secrete acid. Side effects associated with H⁺, K⁺ -ATPase inhibitors include nausea, diarrhea, abdominal colic, headache, dizziness, somnolence, skin rashes, and transient elevations of plasma activities of aminotransferases.

5 **[0012]** Sucralfate is also used to treat ulcers. Sucralfate adheres to epithelial cells and is believed to form a protective coating at the base of an ulcer to promote healing. Sucralfate, however, can cause constipation, dry mouth, and interfere with the absorption of other drugs.

10 **[0013]** Antibiotics are used when *Helicobacter pylori* is the underlying cause of the ulcer. Often antibiotic therapy is coupled with the administration of bismuth compounds such as bismuth subsalicylate and colloidal bismuth citrate. The bismuth compounds are believed to enhance secretion of mucous and HCO₃⁻, inhibit pepsin activity, and act as an antibacterial against *H. pylori*. Ingestion of bismuth compounds, however, can lead to elevated plasma concentrations of Bi⁺³ and can interfere with the absorption of other drugs.

15 **[0014]** Prostaglandin analogues, such as misoprostal, inhibit secretion of acid and stimulate the secretion of mucous and bicarbonate and are also used to treat ulcers, especially ulcers in patients who require nonsteroidal anti-inflammatory drugs. Effective oral doses of prostaglandin analogues, however, can cause diarrhea and abdominal cramping. In addition, some prostaglandin analogues are abortifacients.

20 **[0015]** Carbenoxolone, a mineral corticoid, can also be used to treat ulcers. Carbenoxolone appears to alter the composition and quantity of mucous, thereby enhancing the mucosal barrier. Carbenoxolone, however, can lead to Na⁺ and fluid retention, hypertension, hypokalemia, and impaired glucose tolerance.

25 **[0016]** Muscarinic cholinergic antagonists such as pirenzapine and telenzapine can also be used to reduce acid secretion and treat ulcers. Side effects of muscarinic cholinergic antagonists include dry mouth, blurred vision, and constipation. The Merck Manual of Medical Information 496-500 (R. Berkow ed., 1997) and Goodman and Gilman's The Pharmacological Basis of Therapeutics 901-915 (J. Hardman and L. Limbird eds., 9th ed. 1996).

30 **[0017]** Inflammatory-bowel disease ("IBD") is a chronic disorder in which the bowel becomes inflamed, often causing recurring abdominal cramps and diarrhea. The two types of IBD are Crohn's disease and ulcerative colitis.

35 **[0018]** Crohn's disease, which can include regional enteritis, granulomatous ileitis, and ileocolitis, is a chronic inflammation of the intestinal wall. Crohn's disease occurs equally in both sexes and is more common in Jews of eastern-European ancestry. Most cases of Crohn's disease begin before age 30 and the majority start between the ages of 14 and 24. The disease typically affects the full thickness of the intestinal wall. Generally the disease affects the lowest portion of the small intestine (ileum) and the large intestine, but can occur in any part of the digestive tract.

40 **[0019]** Early symptoms of Crohn's disease are chronic diarrhea, crampy abdominal pain, fever, loss of appetite, and weight loss. Complications associated with Crohn's disease include the development of intestinal obstructions, abnormal connecting channels (fistulas), and abscesses. The risk of cancer of the large intestine is increased in people who have Crohn's disease. Often Crohn's disease is associated with other disorders such as gallstones, inadequate absorption of nutrients, amyloidosis, arthritis, episcleritis, aphthous stomatitis, erythema nodosum, pyoderma gangrenosum, ankylosing spondylitis, sacroiliitis, uveitis, and primary sclerosing cholangitis. There is no known cure for Crohn's disease.

45 **[0020]** Cramps and diarrhea, side effects associated with Crohn's disease, can be relieved by anticholinergic drugs, diphenoxylate, loperamide, deodorized opium tincture, or codeine. Generally, the drug is taken orally before a meal.

50 **[0021]** Broad-spectrum antibiotics are often administered to treat the symptoms of Crohn's disease. The antibiotic metronidazole is often administered when the disease affects the large intestine or causes abscesses and fistulas around the anus. Long-term use of metronidazole, however, can damage nerves, resulting in pins-and-needles sensations in the arms and legs. Sulfasalazine and chemically related drugs can suppress mild inflammation, especially in the large intestine. These drugs, however, are less effective in sudden, severe flare-ups. Corticosteroids, such as prednisone, reduce fever and diarrhea and relieve abdominal pain and tenderness. Long-term corticosteroid therapy, however, invariably results in serious side effects such as high blood-sugar levels, increased risk of infection, osteoporosis, water retention, and fragility of the skin. Drugs such as azathioprine and mercaptopurine can compromise the immune system and are often effective for Crohn's disease in patients that do not respond to other drugs. These drugs, however, usually need 3 to 6 months before they produce benefits and can cause serious side effects such as allergy, pancreatitis, and low white-blood-cell count.

55 **[0022]** When Crohn's disease causes the intestine to be obstructed or when abscesses or fistulas do not heal, surgery can be necessary to remove diseased sections of the intestine. Surgery, however, does not cure the disease, and inflammation tends to recur where the intestine is rejoined. In almost half of the cases a second operation is needed. The Merck Manual of Medical Information 528-530 (R. Berkow ed., 1997).

[0023] Ulcerative colitis is a chronic disease in which the large intestine becomes inflamed and ulcerated, leading to episodes of bloody diarrhea, abdominal cramps, and fever. Ulcerative colitis usually begins between ages 15 and 30; however, a small group of people have their first attack between ages 50 and 70. Unlike Crohn's disease, ulcerative colitis never affects the small intestine and does not affect the full thickness of the intestine. The disease usually begins in the rectum and the sigmoid colon and eventually spreads partially or completely throughout the large intestine. The

cause of ulcerative colitis is unknown. Treatment of ulcerative colitis is directed to controlling inflammation, reducing symptoms, and replacing lost fluids and nutrients.

[0024] Irritable-bowel syndrome ("IBS") is a disorder of motility of the entire gastrointestinal tract, causing abdominal pain, constipation, and/or diarrhea. IBS affects three-times more men than women.

[0025] There are two major types of IBS. The first type, spastic-colon type, is commonly triggered by eating, and usually produces periodic constipation and diarrhea with pain. Mucous often appears in the stool. The pain can come in bouts of continuous dull aching pain or cramps, usually in the lower abdomen. The person suffering from spastic-colon type IBS can also experience bloating, gas, nausea, headache, fatigue, depression, anxiety, and difficulty concentrating. The second type of IBS usually produces painless diarrhea or constipation. The diarrhea can begin suddenly and with extreme urgency. Often the diarrhea occurs soon after a meal and can sometimes occur immediately upon awakening.

[0026] Treatment of IBS typically involves modification of an IBS-patient's diet. Often it is recommended that an IBS patient avoid beans, cabbage, sorbitol, and fructose. A low-fat, high-fiber diet can also help some IBS patients. Regular physical activity can also help keep the gastrointestinal tract functioning properly. Drugs such as propantheline that slow the function of the gastrointestinal tract are generally not effective for treating IBS. Antidiarrheal drugs, such as diphenoxylate and loperamide, help with diarrhea. The Merck Manual of Medical Information 525-526 (R. Berkow ed., 1997).

[0027] Certain pharmaceutical agents have been administered for treating addiction. U.S. Patent No. 5,556,838 to Mayer et al. discloses the use of nontoxic NMDA-blocking agents co-administered with an addictive substance to prevent the development of tolerance or withdrawal symptoms. U.S. Patent No. 5,574,052 to Rose et al. discloses co-administration of an addictive substance with an antagonist to partially block the pharmacological effects of the addictive substance. U.S. Patent No. 5,075,341 to Mendelson et al. discloses the use of a mixed opiate agonist/antagonist to treat cocaine and opiate addiction. U.S. Patent No. 5,232,934 to Downs discloses administration of 3-phenoxypyridine to treat addiction. U.S. Patents No. 5,039,680 and 5,198,459 to Imperato et al. disclose using a serotonin antagonist to treat chemical addiction. U.S. Patent No. 5,556,837 to Nestler et. al. discloses infusing BDNF or NT-4 growth factors to inhibit or reverse neurological adaptive changes that correlate with behavioral changes in an addicted individual. U.S. Patent. No. 5,762,925 to Sagan discloses implanting encapsulated adrenal medullary cells into an animal's central nervous system to inhibit the development of opioid intolerance. U.S. Patent No. 6,204,284 to Beer et al. discloses racemic (\pm)-1-(3,4-dichlorophenyl)-3-azabicyclo[3.1.0]hexane for use in the prevention or relief of a withdrawal syndrome resulting from addiction to drugs and for the treatment of chemical dependencies.

[0028] Without treatment, Parkinson's disease progresses to a rigid akinetic state in which patients are incapable of caring for themselves. Death frequently results from complications of immobility, including aspiration pneumonia or pulmonary embolism. Drugs commonly used for the treatment of Parkinson's disease include carbidopa/levodopa, pergolide, bromocriptine, selegiline, amantadine, and trihexyphenidyl hydrochloride. There remains, however, a need for drugs useful for the treatment of Parkinson's disease and having an improved therapeutic profile.

[0029] Anxiety is a fear, apprehension or dread of impending danger often accompanied by restlessness, tension, tachycardia and dyspnea. Currently, benzodiazepines are the most commonly used anti-anxiety agents for generalized anxiety disorder. Benzodiazepines, however, carry the risk of producing impairment of cognition and skilled motor functions, particularly in the elderly, which can result in confusion, delirium, and falls with fractures. Sedatives are also commonly prescribed for treating anxiety. The azapirones, such as buspirone, are also used to treat moderate anxiety. The azapirones, however, are less useful for treating severe anxiety accompanied with panic attacks.

[0030] Epilepsy is a disorder characterized by the tendency to have recurring seizures. Examples of drugs for treating a seizure and epilepsy include carbamazepine, ethosuximide, gabapentin, lamotrigine, phenobarbital, phenytoin, primidone, valproic acid, trimethadione, benzodiazepines, γ -vinyl GABA, acetazolamide, and felbamate. Anti-seizure drugs, however, can have side effects such as drowsiness; hyperactivity; hallucinations; inability to concentrate; central and peripheral nervous system toxicity, such as nystagmus, ataxia, diplopia, and vertigo; gingival hyperplasia; gastrointestinal disturbances such as nausea, vomiting, epigastric pain, and anorexia; endocrine effects such as inhibition of antidiuretic hormone, hyperglycemia, glycosuria, osteomalacia; and hypersensitivity such as scarlatiniform rash, morbilliform rash, Stevens-Johnson syndrome, systemic lupus erythematosus, and hepatic necrosis; and hematological reactions such as red-cell aplasia, agranulocytosis, thrombocytopenia, aplastic anemia, and megaloblastic anemia. The Merck Manual of Medical Information 345-350 (R. Berkow ed., 1997).

[0031] Symptoms of strokes vary depending on what part of the brain is affected. Symptoms include loss or abnormal sensations in an arm or leg or one side of the body, weakness or paralysis of an arm or leg or one side of the body, partial loss of vision or hearing, double vision, dizziness, slurred speech, difficulty in thinking of the appropriate word or saying it, inability to recognize parts of the body, unusual movements, loss of bladder control, imbalance, and falling, and fainting. The symptoms can be permanent and can be associated with coma or stupor. Examples of drugs for treating strokes include anticoagulants such as heparin, drugs that break up clots such as streptokinase or tissue plasminogen activator, and drugs that reduce swelling such as mannitol or corticosteroids. The Merck Manual of Medical Information 352-355 (R. Berkow ed., 1997).

[0032] Pruritus is an unpleasant sensation that prompts scratching. Conventionally, pruritus is treated by phototherapy with ultraviolet B or PUVA or with therapeutic agents such as naltrexone, nalmefene, danazol, tricyclics, and antidepressants.

[0033] Selective antagonists of the metabotropic glutamate receptor 5 ("mGluR5") have been shown to exert analgesic activity in *in vivo* animal models (K. Walker et al., *Neuropharmacology* 40:1-9 (2000) and A. Dogrul et al., *Neuroscience Letters*, 292(2): 115-118 (2000)).

[0034] Selective antagonists of the mGluR5 receptor have also been shown to exert anxiolytic and anti-depressant activity in *in vivo* animal models (E. Tatarczynska et al., *Br. J. Pharmacol.* 132(7):1423-1430 (2001) and P.J.M. Will et al., *Trends in Pharmacological Sciences* 22(7):331-37 (2001)).

[0035] Selective antagonists of the mGluR5 receptor have also been shown to exert anti-Parkinson activity *in vivo* (K. J. Ossowska et al., *Neuropharmacology* 41(4):413-20 (2001) and P.J.M. Will et al., *Trends in Pharmacological Sciences* 22(7):331-37 (2001)).

[0036] Selective antagonists of the mGluR5 receptor have also been shown to exert anti-dependence activity *in vivo* (C. Chiamulera et al., *Nature Neuroscience* 4(9):873-74 (2001)).

[0037] U.S. Patent No. 6,495,550 to McNaughton-Smith et al. discloses pyridine substituted benzanilides useful as openers of potassium ion channels.

[0038] International publication no. WO 94/05153 discloses substituted benzene compounds useful as herbicides.

[0039] International publication no. WO 04/058762 discloses substituted 9-membered bicyclic compounds useful as MK-2 inhibitors.

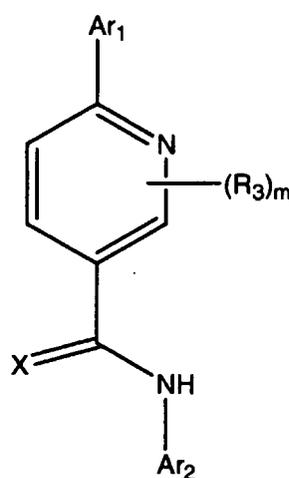
[0040] United Kingdom Application No. GB 2 276 162 discloses aniline and benzanilide compounds useful for treating disorders of the central nervous system, endocrine disorders, and sexual dysfunction.

[0041] United Kingdom Application No. GB 2 276 163 discloses pyridine compounds useful for treating disorders of the central nervous system, endocrine disorders, and sexual dysfunction.

[0042] European Application No. EP 533267 discloses benzanilide compounds useful as 5-HT_{1D} antagonists.

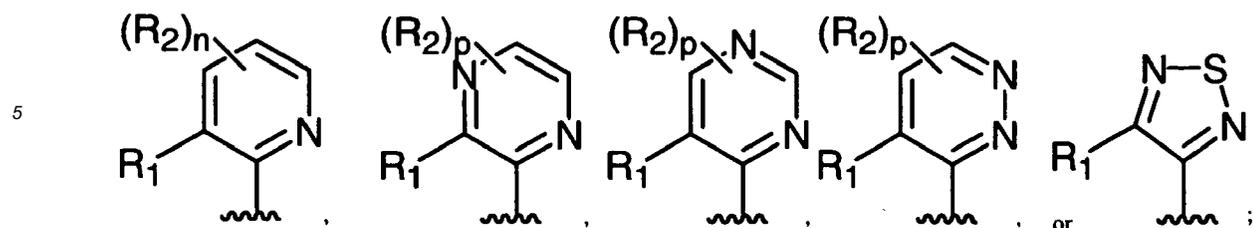
[0043] There remains a need in the art for compounds useful for treating or preventing pain, UI, an ulcer, IBD, IBS, an addictive disorder, Parkinson's disease, parkinsonism, anxiety, epilepsy, stroke, a seizure, a pruritic condition, psychosis, a cognitive disorder, a memory deficit, restricted brain function, Huntington's chorea, amyotrophic lateral sclerosis, dementia, retinopathy, a muscle spasm, a migraine, vomiting, dyskinesia, or depression in an animal.

[0044] The present invention encompasses compounds of formula (I):

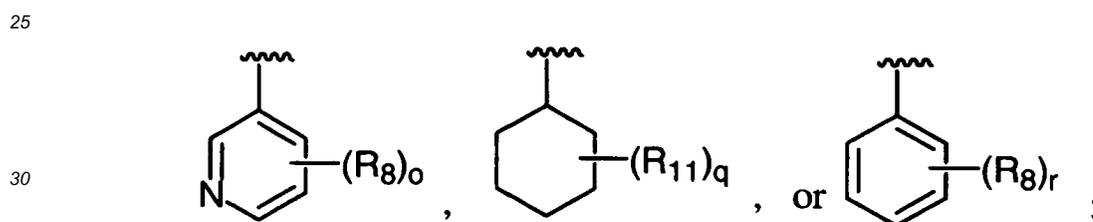
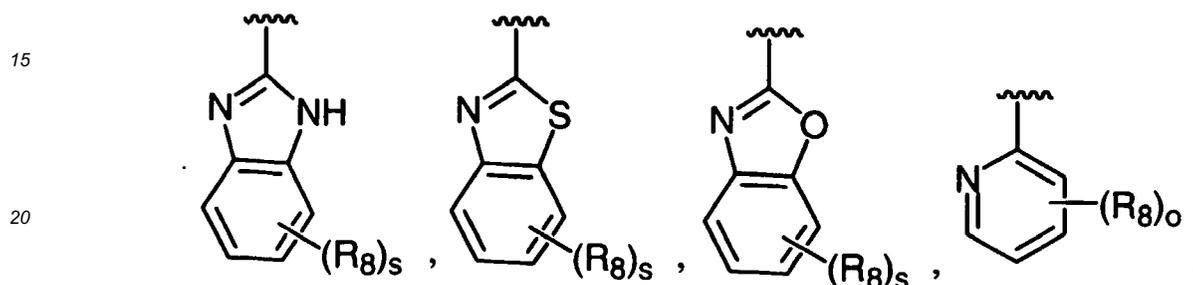


(I)

and pharmaceutically acceptable salts thereof, where Ar₁ is



Ar₂ is



X is O or S;

35 R₁ is -halo, -CH₃, -C(halo)₃, -CH(halo)₂, or -CH₂(halo);
each R₂ is independently:

(a) -halo, -OH, -NH₂, -CN, or -NO₂;

40 (b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered)heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups;
or

45 (c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered)heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₃ is independently:

50 (a) -halo, -CN, -OH, -NO₂, or -NH₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered)heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups;
55 or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered) heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R_5 is independently -CN, -OH, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R_6 is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R_7 is independently -H, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, or CH₂(halo);

each R_8 is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R_{11} is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, (C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each halo is independently -F, -Cl, -Br, or -I;

m is an integer ranging from 0 to 3;

n is an integer ranging from 0 to 3;

o is an integer ranging from 0 to 4;

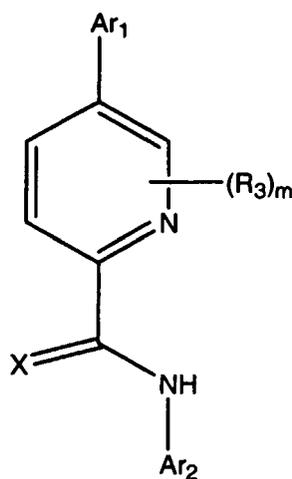
p is an integer ranging from 0 to 2;

q is an integer ranging from 0 to 6;

r is an integer ranging from 0 to 5; and

s is an integer ranging from 0 to 4.

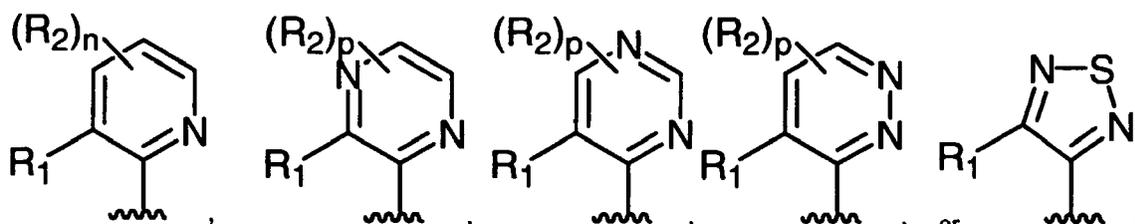
[0045] The invention further encompasses compounds of formula (II):



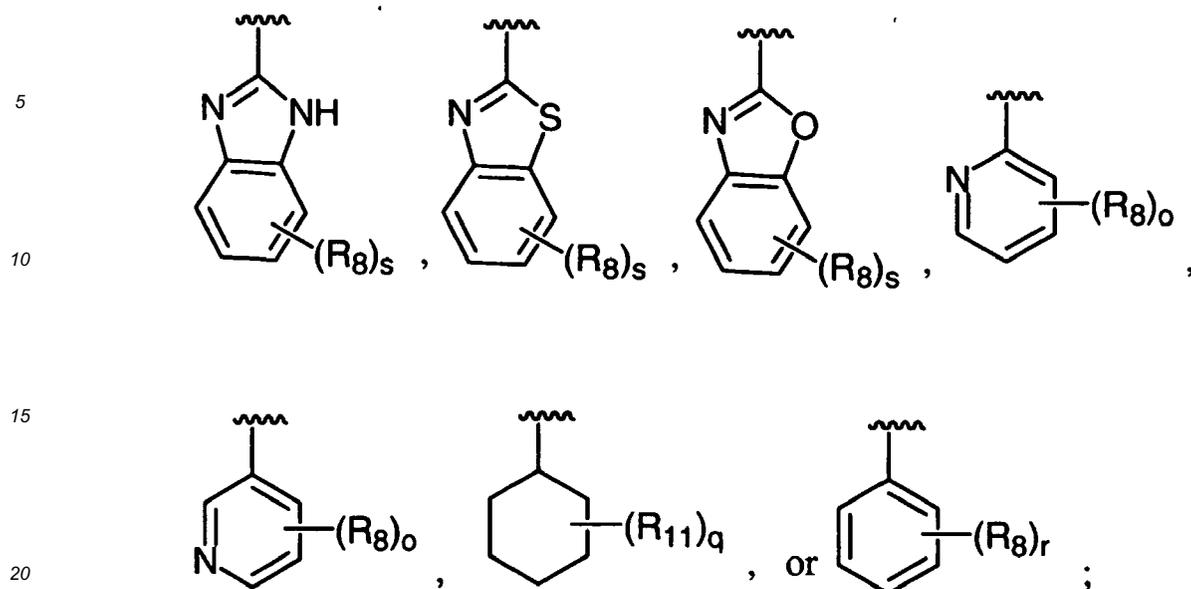
(II)

and pharmaceutically acceptable salts thereof, where

Ar_1 is



Ar_2 is



X is O or S;

R₁ is -halo, -CH₃, -C(halo)₃, -CH(halo)₂, or -CH₂(halo);

each R₂ is independently:

(a) -halo, -OH, -NH₂, -CN, or -NO₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered)heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups; or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered)heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₃ is independently:

(a) -halo, -CN, -OH, -NO₂, or -NH₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered)heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups; or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered) heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₅ is independently -CN, -OH, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₆ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₇ is independently -H, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, or CH₂(halo);

each R₈ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₁₁ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, (C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each halo is independently -F, -Cl, -Br, or -I;

m is an integer ranging from 0 to 3;

n is an integer ranging from 0 to 3;

o is an integer ranging from 0 to 4;

p is an integer ranging from 0 to 2;

q is an integer ranging from 0 to 6;

r is an integer ranging from 0 to 5; and

s is an integer ranging from 0 to 4.

[0046] A compound of formula (I) or (II) or a pharmaceutically acceptable salt thereof (a "Pyridylene Compound") is useful for treating or preventing pain, UI, an ulcer, IBD, IBS, an addictive disorder, Parkinson's disease, parkinsonism, anxiety, epilepsy, stroke, a seizure, a pruritic condition, psychosis, a cognitive disorder, a memory deficit, restricted brain function, Huntington's chorea, ALS, dementia, retinopathy, a muscle spasm, a migraine, vomiting, dyskinesia, or depression (each being a "Condition") in an animal. The pyridylene compounds can thus be used in the manufacture of a medicament for treating a Condition in an animal in need thereof.

[0047] The invention also relates to compositions comprising an effective amount of a Pyridylene Compound and a pharmaceutically acceptable carrier or excipient. The compositions are useful for treating or preventing a Condition in an animal.

[0048] The invention further relates to use of pyridylene compounds in the manufacture of a medicament for treating a Condition, comprising administering to an animal in need thereof an effective amount of a Pyridylene Compound.

[0049] The invention further relates to use of pyridylene compounds in the manufacture of a medicament for preventing a Condition, comprising administering to an animal in need thereof an effective amount of a Pyridylene Compound.

[0050] The invention still further relates to methods for inhibiting Vanilloid Receptor 1 ("VR1") function in a cell, comprising contacting a cell capable of expressing VR1 with an effective amount of a Pyridylene Compound.

[0051] The invention still further relates to methods for inhibiting mGluR5 function in a cell, comprising contacting a cell capable of expressing mGluR5 with an effective amount of a Pyridylene Compound.

[0052] The invention still further relates to methods for inhibiting metabotropic glutamate receptor 1 ("mGluR1") function in a cell, comprising contacting a cell capable of expressing mGluR1 with an effective amount of a Pyridylene Compound. In these methods, the respective cells are not in direct contact with the animal or human body. Where the cells are in direct contact with the animal or human body, the invention relates to the use of pyridylene compounds in the manufacture of a medicament for inhibiting VR1, mGluR5 or mGluR1.

[0053] The invention still further relates to methods for preparing a composition, comprising the step of admixing a Pyridylene Compound and a pharmaceutically acceptable carrier or excipient.

[0054] The invention still further relates to a kit comprising a container containing an effective amount of a Pyridylene Compound.

[0055] The present invention can be understood more fully by reference to the following detailed description and illustrative examples, which are intended to exemplify non-limiting embodiments of the invention.

4. DETAILED DESCRIPTION OF THE INVENTION

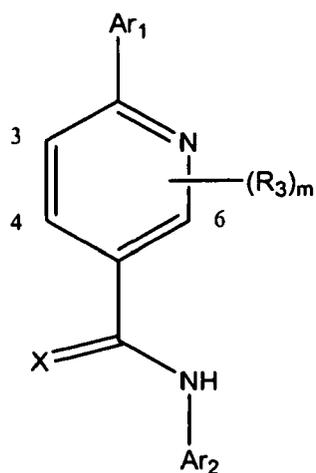
4.1 PYRIDYLENE COMPOUNDS OF FORMULA (I)

[0056] As stated above, the present invention encompasses compounds of Formula (I)

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and pharmaceutically acceptable salts thereof, where Ar_1 , Ar_2 , R_3 , X , and m are defined above for the Pyridylene Compounds of formula (I).

[0057] In one embodiment, Ar_1 is a pyridyl group;

[0058] In another embodiment, Ar_1 is a pyrimidinyl group.

[0059] In another embodiment, Ar_1 is a pyrazinyl group.

[0060] In another embodiment, Ar_1 is a pyridazinyl group.

25 [0061] In another embodiment, Ar_1 is a thiadiazolyl group.

[0062] In another embodiment, X is O.

[0063] In another embodiment, X is S.

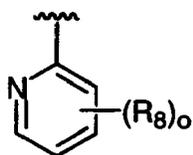
[0064] In another embodiment, Ar_2 is a benzoimidazolyl group.

[0065] In another embodiment, Ar_2 is a benzothiazolyl group.

30 [0066] In another embodiment, Ar_2 is a benzooxazolyl group.

[0067] In another embodiment, Ar_2 is

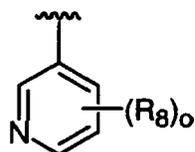
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[0068] In another embodiment, Ar_2 is

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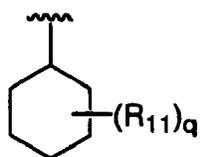


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[0069] In another embodiment, Ar_2 is

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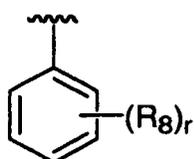
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[0070] In another embodiment, Ar_2 is

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[0071] In another embodiment, m is 0.

[0072] In another embodiment, m is 1.

[0073] In another embodiment, m is 2.

[0074] In another embodiment, m is 3.

[0075] In another embodiment, p is 0.

[0076] In another embodiment, p is 1.

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[0077] In another embodiment, p is 2.

[0078] In another embodiment, n is 0.

[0079] In another embodiment, n is 1.

[0080] In another embodiment, n is 2.

[0081] In another embodiment, n is 3.

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[0082] In another embodiment, o is 0.

[0083] In another embodiment, o is 1.

[0084] In another embodiment, o is 2.

[0085] In another embodiment, o is 3.

[0086] In another embodiment, o is 4.

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[0087] In another embodiment, q is 0.

[0088] In another embodiment, q is 1.

[0089] In another embodiment, q is 2.

[0090] In another embodiment, q is 3.

[0091] In another embodiment, q is 4.

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[0092] In another embodiment, q is 5.

[0093] In another embodiment, q is 6.

[0094] In another embodiment, r is 0.

[0095] In another embodiment, r is 1.

[0096] In another embodiment, r is 2.

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[0097] In another embodiment, r is 3.

[0098] In another embodiment, r is 4.

[0099] In another embodiment, r is 5.

[0100] In another embodiment, s is 0.

[0101] In another embodiment, s is 1.

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[0102] In another embodiment, s is 2.

[0103] In another embodiment, s is 3.

[0104] In another embodiment, s is 4.

[0105] In another embodiment, R_1 is -halo.

[0106] In another embodiment, R_1 is -Cl.

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[0107] In another embodiment, R_1 is -Br.

[0108] In another embodiment, R_1 is -I.

[0109] In another embodiment, R_1 is -F.

[0110] In another embodiment, R_1 is -CH₃.

[0111] In another embodiment, R_1 is $-C(\text{halo})_3$.

[0112] In another embodiment, R_1 is $-\text{CH}(\text{halo})_2$.

[0113] In another embodiment, R_1 is $-\text{CH}_2(\text{halo})$.

[0114] In another embodiment, n or p is 1 and R_2 is $-\text{halo}$, $-\text{OH}$, $-\text{NH}_2$, $-\text{CN}$, or $-\text{NO}_2$.

5 [0115] In another embodiment, n or p is 1 and R_2 is $-(\text{C}_1\text{-C}_{10})\text{alkyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkenyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkynyl}$, $-(\text{C}_3\text{-C}_{10})\text{cycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkyl}$, $-(\text{C}_5\text{-C}_{10})\text{cycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkenyl}$, $-(3\text{- to }7\text{-membered})\text{heterocycle}$, or $-(7\text{- to }10\text{-membered})\text{bicycloheterocycle}$, each of which is unsubstituted or substituted with one or more R_5 groups.

10 [0116] In another embodiment, n or p is 1 and R_2 is $-\text{phenyl}$, $-\text{naphthyl}$, $-(\text{C}_{14})\text{aryl}$ or $-(5\text{- to }10\text{-membered})\text{heteroaryl}$, each of which is unsubstituted or substituted with one or more R_6 groups.

[0117] In another embodiment, m is 1 and R_3 is $-\text{halo}$, $-\text{CN}$, $-\text{OH}$, $-\text{NO}_2$, or $-\text{NH}_2$.

[0118] In another embodiment, m is 1 and R_3 is $-(\text{C}_1\text{-C}_{10})\text{alkyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkenyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkynyl}$, $-(\text{C}_3\text{-C}_{10})\text{cycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkyl}$, $-(\text{C}_5\text{-C}_{10})\text{cycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkenyl}$, $-(3\text{- to }7\text{-membered})\text{heterocycle}$, or $-(7\text{- to }10\text{-membered})\text{bicycloheterocycle}$, each of which is unsubstituted or substituted with one or more R_5 groups.

15 [0119] In another embodiment, m is 1 and R_3 is $-\text{phenyl}$, $-\text{naphthyl}$, $-(\text{C}_{14})\text{aryl}$ or $-(5\text{- to }10\text{-membered})\text{heteroaryl}$, each of which is unsubstituted or substituted with one or more R_6 groups.

[0120] In another embodiment, m is 1 and R_3 is $-(\text{C}_1\text{-C}_{10})\text{alkyl}$.

[0121] In another embodiment, m is 1 and R_3 is $-\text{CH}_3$.

20 [0122] In another embodiment, m is 1 and R_3 is $-\text{halo}$.

[0123] In another embodiment, m is 1 and R_3 is $-\text{Cl}$.

[0124] In another embodiment, m is 1 and R_3 is $-\text{Br}$.

[0125] In another embodiment, m is 1 and R_3 is $-\text{I}$.

[0126] In another embodiment, m is 1 and R_3 is $-\text{F}$.

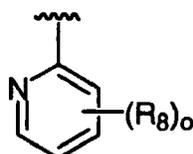
25 [0127] In another embodiment, Ar_2 is a benzothiazolyl group and s is 1.

[0128] In another embodiment, Ar_2 is a benzoimidazolyl group and s is 1.

[0129] In another embodiment, Ar_2 is a benzooxazolyl group and s is 1.

[0130] In another embodiment, Ar_2 is

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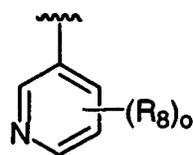


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and o is 1.

[0131] In another embodiment, Ar_2 is

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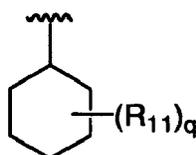


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and o is 1.

[0132] In another embodiment, Ar_2 is

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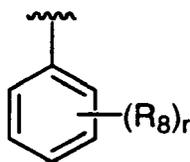


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and q is 1.

[0133] In another embodiment, Ar₂ is

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and r is 1.

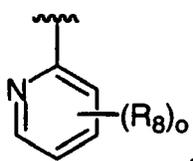
[0134] In another embodiment, Ar₂ is a benzothiazolyl group, s is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0135] In another embodiment, Ar₂ is a benzoimidazolyl group, s is 1, and R₈ is -halo or -(C₁-C₆)alkyl.

15 **[0136]** In another embodiment, Ar₂ is a benzooxazolyl group, s is 1, and R₈ is -halo or -(C₁-C₆)alkyl.

[0137] In another embodiment, Ar₂ is

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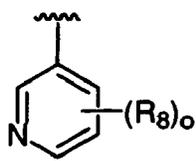


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o is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0138] In another embodiment, Ar₂ is

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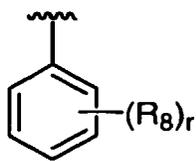


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o is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0139] In another embodiment, Ar₂ is

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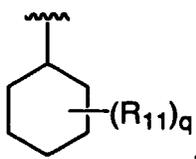


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r is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0140] In another embodiment, Ar₂ is

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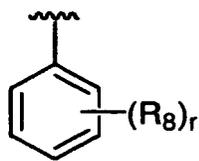


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q is 1, and R₁₁ is -halo or -(C₁-C₆) alkyl.

[0141] In another embodiment, Ar₂ is

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r is 1, and R₈ is at the *para*-position of the phenyl ring.

[0142] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is a benzothiazolyl group.

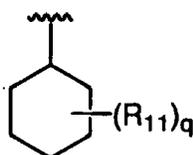
[0143] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is a benzooxazolyl group.

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[0144] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is a benzoimidazolyl group.

[0145] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is

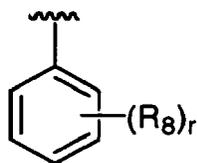
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[0146] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is

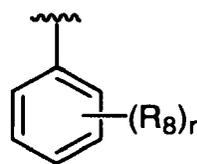
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[0147] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, Ar₂ is

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and R₈ is a -(C₁-C₆)alkyl. In another embodiment, r is 1, the -(C₁-C₆)alkyl is substituted at the phenyl group's *para*-position.

In another embodiment, r is 1, the -(C₁-C₆)alkyl is a *tert*-butyl group. In another embodiment, r is 1, the -(C₁-C₆)alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1, the -(C₁-C₆)alkyl

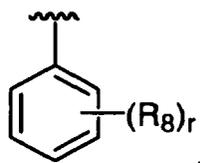
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is an *iso*-propyl group. In another embodiment, the -(C₁-C₆)alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

[0148] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, Ar₂ is

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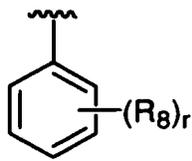


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r is 1, and R_8 is $-CF_3$. In another embodiment, r is 1 and the $-CF_3$ is substituted at the phenyl group's *para*-position.

[0149] In another embodiment, Ar_1 is a pyridyl group, X is O, m is 0, Ar_2 is

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r is 1, and R_8 is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

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[0150] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, and Ar_2 is a benzothiazolyl group.

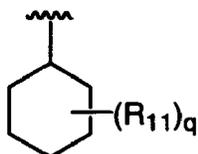
[0151] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, and Ar_2 is a benzooxazolyl group.

[0152] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, and Ar_2 is a benzoimidazolyl group.

[0153] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, and Ar_2 is

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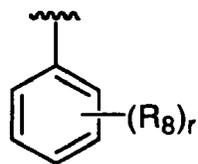
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[0154] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, and Ar_2 is

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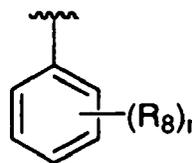
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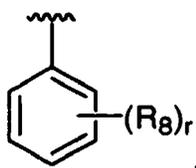
[0155] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, Ar_2 is

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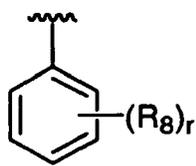
r is 1, and R_8 is a $-(C_1-C_6)$ alkyl. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group. In another embodiment, r is 1, the $-(C_1-C_6)$ alkyl is a *tert*-butyl group, and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is an *iso*-propyl group. In another embodiment, r is 1, the $-(C_1-C_6)$ alkyl is an *iso*-propyl group and is substituted at the phenyl group's *para*-position.

[0156] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, Ar_2 is



r is 1, and R_8 is $-CF_3$. In another embodiment, the $-CF_3$ is substituted at the phenyl group's *para*-position.

[0157] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, Ar_2 is



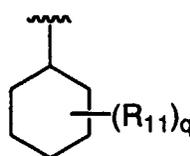
r is 1, and R_8 is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1, -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1, -halo is -F and is substituted at the phenyl group's *para*-position.

[0158] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is a benzothiazolyl group.

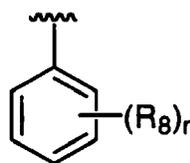
[0159] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is a benzooxazolyl group.

[0160] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is a benzoimidazolyl group.

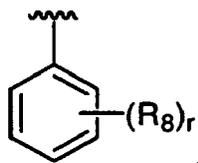
[0161] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is



[0162] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is

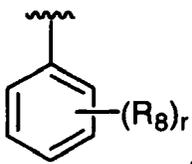


[0163] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, Ar_2 is



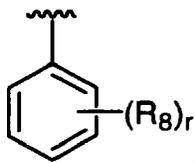
10 r is 1, and R_8 is a $-(C_1-C_6)$ alkyl. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is an iso-propyl group. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

15 **[0164]** In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, Ar_2 is



25 r is 1, and R_8 is $-CF_3$. In another embodiment, the $-CF_3$ is substituted at the phenyl group's *para*-position.

[0165] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, Ar_2 is



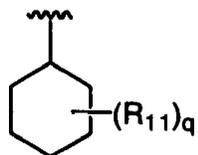
35 r is 1, and R_8 is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

40 **[0166]** In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is a benzothiazolyl group.

[0167] In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is a benzooxazolyl group.

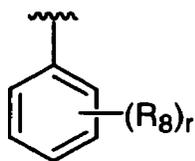
[0168] In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is a benzoimidazolyl group.

45 **[0169]** In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is



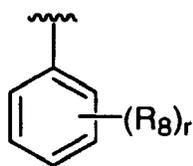
55 **[0170]** In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is

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[0171] In another embodiment, Ar₁ is a pyridazinyl group, X is O, m is 0, Ar₂ is

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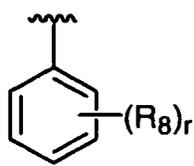
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r is 1, and R₈ is a -(C₁-C₆)alkyl. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is an *iso*-propyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

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[0172] In another embodiment, Ar₁ is a pyridazinyl group, X is O, m is 0, Ar₂ is

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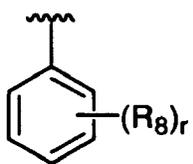
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r is 1, and R₈ is -CF₃. In another embodiment, the -CF₃ is substituted at the phenyl group's *para*-position.

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[0173] In another embodiment, Ar₁ is a pyridazinyl group, X is O, m is 0, Ar₂ is

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r is 1, and R₈ is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

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[0174] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is a benzothiazolyl group.

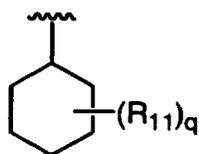
[0175] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is a benzooxazolyl group.

[0176] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is a benzoimidazolyl group.

[0177] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is

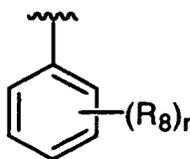
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[0178] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, Ar₂ is

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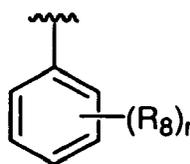
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r is 1, and R₈ is a -(C₁-C₆)alkyl. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is an *iso*-propyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

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[0179] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, Ar₂ is

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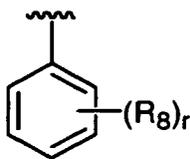


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r is 1, and R₈ is -CF₃. In another embodiment, the -CF₃ is substituted at the phenyl group's *para*-position.

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[0180] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, Ar₂ is



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r is 1, and R₈ is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

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4.2 Pyridylene Compounds of Formula (II)

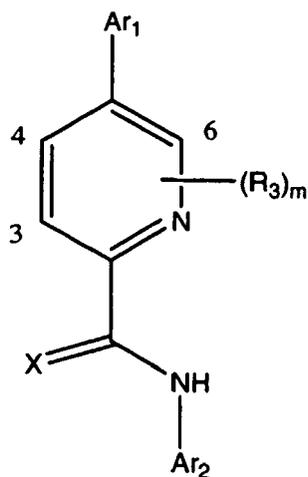
[0181] The invention also relates to Pyridylene Compounds of formula (II)

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(II)

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and pharmaceutically acceptable salts thereof, where Ar_1 , Ar_2 , X, R_3 , and m are defined above for the Pyridylene Compounds of formula (II).

[0182] In one embodiment, Ar_1 is a pyridyl group;

[0183] In another embodiment, pyrimidinyl group.

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[0184] In another embodiment, Ar_1 is a pyrazinyl group.

[0185] In another embodiment, Ar_1 is a pyridazinyl group.

[0186] In another embodiment, Ar_1 is a thiadiazolyl group.

[0187] In another embodiment, X is O.

[0188] In another embodiment, X is S.

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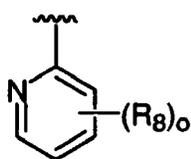
[0189] In another embodiment, Ar_2 is a benzoimidazolyl group.

[0190] In another embodiment, Ar_2 is a benzothiazolyl group.

[0191] In another embodiment, Ar_2 is a benzooxazolyl group.

[0192] In another embodiment, Ar_2 is

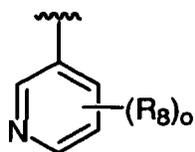
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[0193] In another embodiment, Ar_2 is

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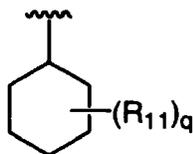


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[0194] In another embodiment, Ar_2 is

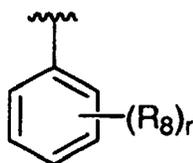
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[0195] In another embodiment, Ar_2 is

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- [0196] In another embodiment, m is 0.
 [0197] In another embodiment, m is 1.
 [0198] In another embodiment, m is 2.
 [0199] In another embodiment, m is 3.
 [0200] In another embodiment, p is 0.
 [0201] In another embodiment, p is 1.
 [0202] In another embodiment, p is 2.
 [0203] In another embodiment, n is 0.
 [0204] In another embodiment, n is 1.
 [0205] In another embodiment, n is 2.
 [0206] In another embodiment, n is 3.
 [0207] In another embodiment, o is 0.
 [0208] In another embodiment, o is 1.
 [0209] In another embodiment, o is 2.
 [0210] In another embodiment, o is 3.
 [0211] In another embodiment, o is 4.
 [0212] In another embodiment, q is 0.
 [0213] In another embodiment, q is 1.
 [0214] In another embodiment, q is 2.
 [0215] In another embodiment, q is 3.
 [0216] In another embodiment, q is 4.
 [0217] In another embodiment, q is 5.
 [0218] In another embodiment, q is 6.
 [0219] In another embodiment, r is 0.
 [0220] In another embodiment, r is 1.
 [0221] In another embodiment, r is 2.
 [0222] In another embodiment, r is 3.
 [0223] In another embodiment, r is 4.
 [0224] In another embodiment, r is 5.
 [0225] In another embodiment, s is 0.
 [0226] In another embodiment, s is 1.
 [0227] In another embodiment, s is 2.
 [0228] In another embodiment, s is 3.
 [0229] In another embodiment, s is 4.
 [0230] In another embodiment, R_1 is -halo.
 [0231] In another embodiment, R_1 is -Cl.
 [0232] In another embodiment, R_1 is -Br.
 [0233] In another embodiment, R_1 is -I.
 [0234] In another embodiment, R_1 is -F.
 [0235] In another embodiment, R_1 is -CH₃.

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[0236] In another embodiment, R_1 is $-C(\text{halo})_3$.

[0237] In another embodiment, R_1 is $-\text{CH}(\text{halo})_2$.

[0238] In another embodiment, R_1 is $-\text{CH}_2(\text{halo})$.

[0239] In another embodiment, n or p is 1 and R_2 is $-\text{halo}$, $-\text{OH}$, $-\text{NH}_2$, $-\text{CN}$, or $-\text{NO}_2$.

5 [0240] In another embodiment, n or p is 1 and R_2 is $-(\text{C}_1\text{-C}_{10})\text{alkyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkenyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkynyl}$, $-(\text{C}_3\text{-C}_{10})\text{cycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkyl}$, $-(\text{C}_5\text{-C}_{10})\text{cycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkenyl}$, $-(3\text{- to }7\text{-membered})\text{heterocycle}$, or $-(7\text{- to }10\text{-membered})\text{bicycloheterocycle}$, each of which is unsubstituted or substituted with one or more R_5 groups.

10 [0241] In another embodiment, n or p is 1 and R_2 is $-\text{phenyl}$, $-\text{naphthyl}$, $-(\text{C}_{14})\text{aryl}$ or $-(5\text{- to }10\text{-membered})\text{heteroaryl}$, each of which is unsubstituted or substituted with one or more R_6 groups.

[0242] In another embodiment, m is 1 and R_3 is $-\text{halo}$, $-\text{CN}$, $-\text{OH}$, $-\text{NO}_2$, or $-\text{NH}_2$.

[0243] In another embodiment, m is 1 and R_3 is $-(\text{C}_1\text{-C}_{10})\text{alkyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkenyl}$, $-(\text{C}_2\text{-C}_{10})\text{alkynyl}$, $-(\text{C}_3\text{-C}_{10})\text{cycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkyl}$, $-(\text{C}_5\text{-C}_{10})\text{cycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{bicycloalkenyl}$, $-(\text{C}_8\text{-C}_{14})\text{tricycloalkenyl}$, $-(3\text{- to }7\text{-membered})\text{heterocycle}$, or $-(7\text{- to }10\text{-membered})\text{bicycloheterocycle}$, each of which is unsubstituted or substituted with one or more R_5 groups.

15 [0244] In another embodiment, m is 1 and R_3 is $-\text{phenyl}$, $-\text{naphthyl}$, $-(\text{C}_{14})\text{aryl}$ or $-(5\text{- to }10\text{-membered})\text{heteroaryl}$, each of which is unsubstituted or substituted with one or more R_6 groups.

[0245] In another embodiment, m is 1 and R_3 is $-(\text{C}_1\text{-C}_{10})\text{alkyl}$.

[0246] In another embodiment, m is 1 and R_3 is $-\text{CH}_3$.

20 [0247] In another embodiment, m is 1 and R_3 is $-\text{halo}$.

[0248] In another embodiment, m is 1 and R_3 is $-\text{Cl}$.

[0249] In another embodiment, m is 1 and R_3 is $-\text{Br}$.

[0250] In another embodiment, m is 1 and R_3 is $-\text{I}$.

[0251] In another embodiment, m is 1 and R_3 is $-\text{F}$.

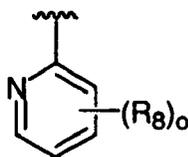
25 [0252] In another embodiment, Ar_2 is a benzothiazolyl group and s is 1.

[0253] In another embodiment, Ar_2 is a benzoimidazolyl group and s is 1.

[0254] In another embodiment, Ar_2 is a benzooxazolyl group and s is 1.

[0255] In another embodiment, Ar_2 is

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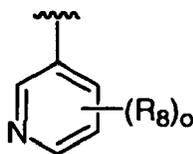


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and o is 1.

[0256] In another embodiment, Ar_2 is

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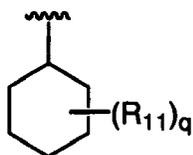


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and o is 1.

[0257] In another embodiment, Ar_2 is

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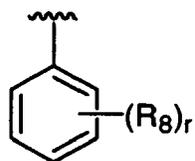


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and q is 1.

[0258] In another embodiment, Ar₂ is

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and r is 1.

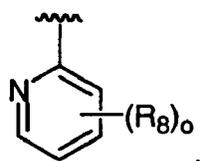
[0259] In another embodiment, Ar₂ is a benzothiazolyl group, s is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0260] In another embodiment, Ar₂ is a benzoimidazolyl group, s is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

15 **[0261]** In another embodiment, Ar₂ is a benzooxazolyl group, s is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0262] In another embodiment, Ar₂ is

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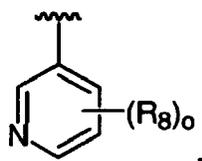


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o is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0263] In another embodiment, Ar₂ is

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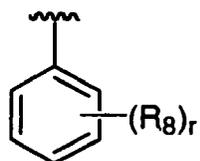


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o is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0264] In another embodiment, Ar₂ is

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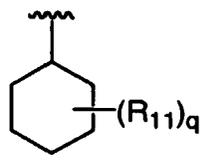


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r is 1, and R₈ is -halo or -(C₁-C₆) alkyl.

[0265] In another embodiment, Ar₂ is

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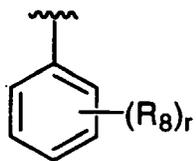


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q is 1, and R₁₁ is -halo or -(C₁-C₆) alkyl.

[0266] In another embodiment, Ar₂ is

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r is 1, and R₈ is at the *para*-position of the phenyl ring.

[0267] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is a benzothiazolyl group.

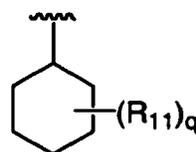
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[0268] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is a benzooxazolyl group.

[0269] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is a benzoimidazolyl group.

[0270] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is

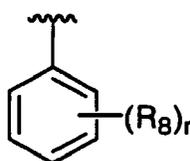
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[0271] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, and Ar₂ is

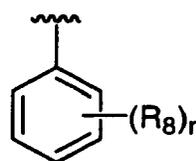
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[0272] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, Ar₂ is

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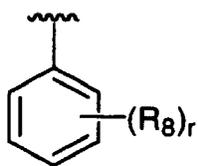
r is 1, and R₈ is a -(C₁-C₆)alkyl. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is an *iso*-propyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

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[0273] In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, Ar₂ is

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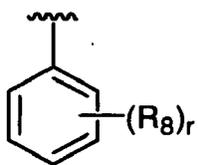
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r is 1, and R₈ is -CF₃. In another embodiment, the -CF₃ is substituted at the phenyl group's *para*-position.

10 **[0274]** In another embodiment, Ar₁ is a pyridyl group, X is O, m is 0, Ar₂ is

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20 r is 1, and R₈ is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

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[0275] In another embodiment, Ar₁ is a pyrazinyl group, X is O, m is 0, and Ar₂ is a benzothiazolyl group.

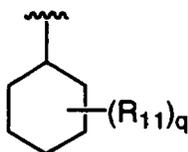
[0276] In another embodiment, Ar₁ is a pyrazinyl group, X is O, m is 0, and Ar₂ is a benzooxazolyl group.

[0277] In another embodiment, Ar₁ is a pyrazinyl group, X is O, m is 0, and Ar₂ is a benzoimidazolyl group.

[0278] In another embodiment, Ar₁ is a pyrazinyl group, X is O, m is 0, and Ar₂ is

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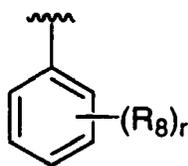
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40 **[0279]** In another embodiment, Ar₁ is a pyrazinyl group, X is O, m is 0, and Ar₂ is

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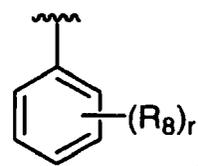
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50 **[0280]** In another embodiment, Ar₁ is a pyrazinyl group, X is O, m is 0, Ar₂ is

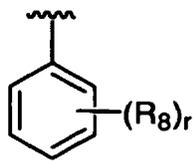
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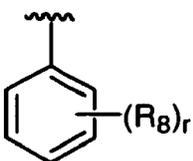
r is 1, and R_8 is a $-(C_1-C_6)$ alkyl. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is an iso-propyl group. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a iso-propyl group and is substituted at the phenyl group's *para*-position.

[0281] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, Ar_2 is



r is 1, and R_8 is $-CF_3$. In another embodiment, the $-CF_3$ is substituted at the phenyl group's *para*-position.

[0282] In another embodiment, Ar_1 is a pyrazinyl group, X is O, m is 0, Ar_2 is



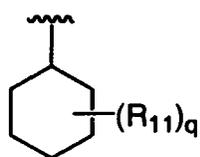
r is 1, and R_8 is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

[0283] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is a benzothiazolyl group.

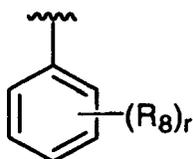
[0284] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is a benzooxazolyl group.

[0285] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is a benzoimidazolyl group.

[0286] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is

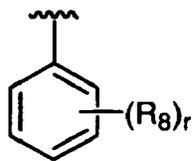


[0287] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, and Ar_2 is



[0288] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, Ar_2 is

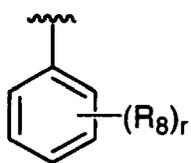
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10 r is 1, and R_8 is a $-(C_1-C_6)$ alkyl. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *tert*-butyl group substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is an *iso*-propyl group. In another embodiment, r is 1 and the $-(C_1-C_6)$ alkyl is a *iso*-propyl group substituted at the phenyl group's *para*-position.

15 **[0289]** In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, Ar_2 is

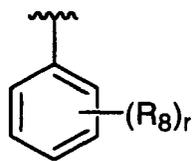
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25 r is 1, and R_8 is $-CF_3$. In another embodiment, the $-CF_3$ is substituted at the phenyl group's *para*-position.

[0290] In another embodiment, Ar_1 is a pyrimidinyl group, X is O, m is 0, Ar_2 is

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r is 1, and R_8 is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

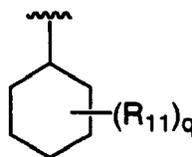
[0291] In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is a benzothiazolyl group.

[0292] In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is a benzooxazolyl group.

[0293] In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is a benzoimidazolyl group.

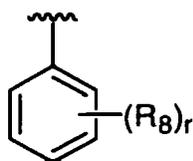
45 **[0294]** In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is

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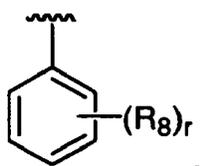
55 **[0295]** In another embodiment, Ar_1 is a pyridazinyl group, X is O, m is 0, and Ar_2 is

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[0296] In another embodiment, Ar₁ is a pyridazinyl group, X is O, m is 0, Ar₂ is

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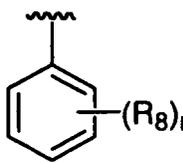
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r is 1, and R₈ is a -(C₁-C₆)alkyl. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is an *iso*-propyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

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[0297] In another embodiment, Ar₁ is a pyridazinyl group, X is O, m is 0, Ar₂ is

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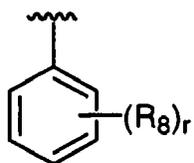


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r is 1, and R₈ is -CF₃. In another embodiment, the -CF₃ is substituted at the phenyl group's *para*-position.

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[0298] In another embodiment, Ar₁ is a pyridazinyl group, X is O, m is 0, Ar₂ is



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r is 1, and R₈ is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

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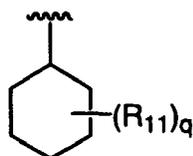
[0299] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is a benzothiazolyl group.

[0300] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is a benzooxazolyl group.

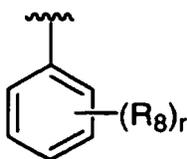
[0301] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is a benzoimidazolyl group.

[0302] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, and Ar₂ is

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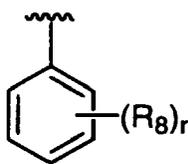


10 [0303] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, Ar₂ is



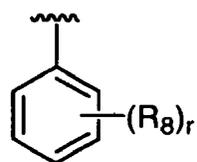
20 r is 1, and R₈ is a -(C₁-C₆)alkyl. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *tert*-butyl group and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is an *iso*-propyl group. In another embodiment, r is 1 and the -(C₁-C₆)alkyl is a *iso*-propyl group and is substituted at the phenyl group's *para*-position.

25 [0304] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, Ar₂ is



35 r is 1, and R₈ is -CF₃. In another embodiment, the -CF₃ is substituted at the phenyl group's *para*-position.

[0305] In another embodiment, Ar₁ is a thiadiazolyl group, X is O, m is 0, Ar₂ is



45 r is 1, and R₈ is -halo. In another embodiment, r is 1 and the -halo is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Cl. In another embodiment, r is 1 and -halo is -Cl and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -Br. In another embodiment, r is 1 and -halo is -Br and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -I. In another embodiment, r is 1 and -halo is -I and is substituted at the phenyl group's *para*-position. In another embodiment, r is 1 and -halo is -F. In another embodiment, r is 1 and -halo is -F and is substituted at the phenyl group's *para*-position.

4.3 PYRIDYLENE COMPOUNDS OF FORMULA (I) AND (II)

55 [0306] In the Pyridylene Compounds that have an R₃ group, the R₃ group can be attached to the carbon atom at the 3-, 4-, or 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In one embodiment, the R₃ group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R₃ group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R₃ group is attached to the carbon at the 6-position of the

pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0307] In another embodiment, the R_3 group is $-CH_3$ and the R_3 group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is $-CH_3$ and the R_3 group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is $-CH_3$ and the R_3 group is attached to the carbon at the 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0308] In another embodiment, the R_3 group is -halo and the R_3 group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -halo and the R_3 group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -halo and the R_3 group is attached to the carbon at the 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0309] In another embodiment, the R_3 group is -Cl and the R_3 group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -Cl and the R_3 group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -Cl and the R_3 group is attached to the carbon at the 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0310] In another embodiment, the R_3 group is -Br and the R_3 group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -Br and the R_3 group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -Br and the R_3 group is attached to the carbon at the 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0311] In another embodiment, the R_3 group is -F and the R_3 group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -F and the R_3 group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -F and the R_3 group is attached to the carbon at the 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0312] In another embodiment, the R_3 group is -I and the R_3 group is attached to the carbon at the 3-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -I and the R_3 group is attached to the carbon at the 4-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II). In another embodiment, the R_3 group is -I and the R_3 group is attached to the carbon at the 6-position of the pyridylene ring of the Pyridylene Compound of formula (I) or (II).

[0313] Optical isomers of the Pyridylene Compounds can be obtained by known techniques such as chiral chromatography or formation of diastereomeric salts from an optically active acid or base.

[0314] In addition, one or more hydrogen, carbon or other atoms of a Pyridylene Compound can be replaced by an isotope of the hydrogen, carbon or other atoms. Such compounds, which are encompassed by the present invention, are useful as research and diagnostic tools in metabolism pharmacokinetic studies and in binding assays.

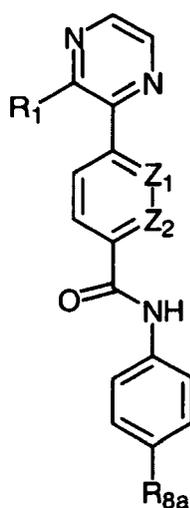
[0315] Illustrative Pyridylene Compounds are listed below in Tables 1-10.

[0316] For the chemical structure depicted, *e.g.*, at the head of each of Tables 1-5, *a* is independently 0 or 1. When *a* = 0, the group at the "a" position is -H. When *a* = 1, the group at the "a" position ($(R_8)_a$) is other than -H, *i.e.*, is R_8 .

[0317] For the chemical structure depicted, *e.g.*, at the head of each of Tables 6-10, *a* is independently 0 or 1. When *a* = 0, the group at the "a" position is -H. When *a* = 1, the group at the "a" position ($(R_8)_a$) is other than -H, *i.e.*, is R_8 .

[0318] For the chemical structure depicted, *e.g.*, at the head of each of Tables 6-10, *b* is independently 0 or 1. When *b* = 0, the group at the "b" position is -H. When *b* = 1, the group at the "b" position ($(R_8)_b$) is other than -H, *i.e.*, is R_8 .

Table 1



(III)

and pharmaceutically acceptable salts thereof, where:

Compound	R ₁	R _{8a}
A1(a and b)	-Cl	-H
A2(a and b)	-Cl	- <i>tert</i> -butyl
A3(a and b)	-Cl	- <i>iso</i> -butyl
A4(a and b)	-Cl	- <i>sec</i> -butyl
A5(a and b)	-Cl	- <i>iso</i> -propyl
A6(a and, b)	-Cl	- <i>n</i> -propyl
A7(a and b)	-Cl	-cyclohexyl
A8(a and b)	-Cl	- <i>tert</i> -butoxy
A9(a and b)	-Cl	- <i>iso</i> -propoxy
A10(a and b)	-Cl	-CF ₃
A11(a and b)	-Cl	-OCF ₃
A12(a and b)	-Cl	-Cl
A13(a and b)	-Cl	-Br
A14(a and b)	-Cl	-I
A15(a and b)	-Cl	- <i>n</i> -butyl
A16(a and b)	-Cl	- <i>n</i> -propyl
A17(a and b)	-F	-H
A18(a and b)	-F	- <i>tert</i> -butyl
A19(a and b)	-F	- <i>iso</i> -butyl
A20(a and b)	-F	- <i>sec</i> -butyl
A21(a and b)	-F	- <i>iso</i> -propyl
A22(a and b)	-F	- <i>n</i> -propyl

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(continued)

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Compound	R ₁	R _{8a}
A23(a and b)	-F	-cyclohexyl
A24(a and b)	-F	- <i>tert</i> -butoxy
A25(a and b)	-F	- <i>iso</i> -propoxy
A26(a and b)	-F	-CF ₃
A27(a and b)	-F	-OCF ₃
A28(a and b)	-F	-Cl
A29(a and b)	-F	-Br
A30(a and b)	-F	-I
A31(a and b)	-F	-n-butyl
A32(a and b)	-F	-n-propyl
A33(a and b)	-CH ₃	-H
A34(a and b)	-CH ₃	- <i>iso</i> -butyl
A35(a and b)	-CH ₃	- <i>tert</i> -butyl
A36(a and b)	-CH ₃	- <i>sec</i> -butyl
A37(a and b)	-CH ₃	- <i>iso</i> -propyl
A38(a and b)	-CH ₃	-n-propyl
A39(a and b)	-CH ₃	-cyclohexyl
A40(a and b)	-CH ₃	- <i>tert</i> -butoxy
A41(a and b)	-CH ₃	- <i>iso</i> -propoxy
A42(a and b)	-CH ₃	-CF ₃
A43(a and b)	-CH ₃	-OCF ₃
A44(a and b)	-CH ₃	-Cl
A45(a and b)	-CH ₃	-Br
A46(a and b)	-CH ₃	-I
A47(a and b)	-CH ₃	-n-butyl
A48(a and b)	-CH ₃	-n-propyl
A49(a and b)	-CF ₃	-H
A50(a and b)	-CF ₃	- <i>tert</i> -butyl
A51(a and b)	-CF ₃	- <i>iso</i> -butyl
A52(a and b)	-CF ₃	- <i>sec</i> -butyl
A53(a and b)	-CF ₃	- <i>iso</i> -propyl
A54(a and b)	-CF ₃	-n-propyl
A55(a and b)	-CF ₃	-cyclohexyl
A56(a and b)	-CF ₃	- <i>tert</i> -butoxy
A57(a and b)	-CF ₃	- <i>iso</i> -propoxy
A58(a and b)	-CF ₃	-CF ₃
A59(a and b)	-CF ₃	-OCF ₃
A60(a and b)	-CF ₃	-Cl

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(continued)

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Compound	R ₁	R _{8a}
A61(a and b)	-CF ₃	-Br
A62(a and b)	-CF ₃	-I
A63(a and b)	-CF ₃	-n-butyl
A64(a and b)	-CF ₃	-n-propyl
A65(a and b)	-CHF ₂	- <i>tert</i> -butyl
A66(a and b)	-CHF ₂	-H
A67(a and b)	-CHF ₂	- <i>iso</i> -butyl
A68(a and b)	-CHF ₂	- <i>sec</i> -butyl
A69(a and b)	-CHF ₂	- <i>iso</i> -propyl
A70(a and b)	-CHF ₂	-n-propyl
A71(a and b)	-CHF ₂	-cyclohexyl
A72(a and b)	-CHF ₂	- <i>tert</i> -butoxy
A73(a and b)	-CHF ₂	- <i>iso</i> -propoxy
A74(a and b)	-CHF ₂	-CF ₃
A75(a and b)	-CHF ₂	-OCF ₃
A76(a and b)	-CHF ₂	-Cl
A77(a and b)	-CHF ₂	-Br
A78(a and b)	-CHF ₂	-I
A79(a and b)	-CHF ₂	-n-butyl
A80(a and b)	-CHF ₂	-n-propyl
A81(a and b)	-Br	-H
A82(a and b)	-Br	- <i>tert</i> -butyl
A83(a and b)	-Br	- <i>iso</i> -butyl
A84(a and b)	-Br	- <i>sec</i> -butyl
A85(a and b)	-Br	- <i>iso</i> -propyl
A86(a and b)	-Br	-n-propyl
A87(a and b)	-Br	-cyclohexyl
A88(a and b)	-Br	- <i>tert</i> -butoxy
A89(a and b)	-Br	- <i>iso</i> -propoxy
A90(a and b)	-Br	-CF ₃
A91(a and b)	-Br	-OCF ₃
A92(a and b)	-Br	-Cl
A93(a and b)	-Br	-Br
A94(a and b)	-Br	-I
A95(a and b)	-Br	-n-butyl
A96(a and b)	-Br	-n-propyl
A97(a and b)	-I	- <i>tert</i> -butyl
A98(a and b)	-I	-H

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(continued)

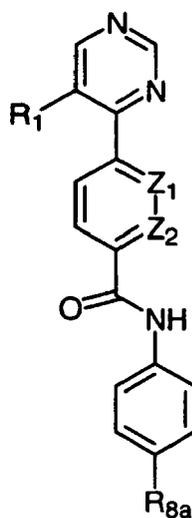
Compound	R ₁	R _{8a}
A99(a and b)	-I	- <i>iso</i> -butyl
A100(a and b)	-I	- <i>sec</i> -butyl
A101(a and b)	-I	- <i>iso</i> -propyl
A102(a and b)	-I	- <i>n</i> -propyl
A103(a and b)	-I	-cyclohexyl
A104(a and b)	-I	- <i>tert</i> -butoxy
A105(a and b)	-I	- <i>iso</i> -propoxy
A106(a and b)	-I	-CF ₃
A107(a and b)	-I	-OCF ₃
A108(a and b)	-I	-Cl
A109(a and b)	-I	-Br
A110(a and b)	-I	-I
A111(a and b)	-I	- <i>n</i> -butyl
A112(a and b)	-I	- <i>n</i> -propyl

[0319] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

Table 2



(IV)

and pharmaceutically acceptable salts thereof,
where:

Compound	R ₁	R _{8a}
B1(a and b)	-Cl	-H
B2(a and b)	-Cl	- <i>tert</i> -butyl

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Compound	R ₁	R _{8a}
B3(a and b)	-Cl	- <i>iso</i> -butyl
B4(a and b)	-Cl	- <i>sec</i> -butyl
B5(a and b)	-Cl	- <i>iso</i> -propyl
B6(a and b)	-Cl	-n-propyl
B7(a and b)	-Cl	-cyclohexyl
B8(a and b)	-Cl	- <i>tert</i> -butoxy
B9(a and b)	-Cl	- <i>iso</i> -propoxy
B10(a and b)	-Cl	-CF ₃
B11(a and b)	-Cl	-OCF ₃
B12(a and b)	-Cl	-Cl
B13(a and b)	-Cl	-Br
B14(a and b)	-Cl	-I
B15(a and b)	-Cl	-n-butyl
B16(a and b)	-Cl	-n-propyl
B17(a and b)	-F	-H
B18(a and b)	-F	- <i>tert</i> -butyl
B19(a and b)	-F	- <i>iso</i> -butyl
B20(a and b)	-F	- <i>sec</i> -butyl
B21(a and b)	-F	- <i>iso</i> -propyl
B22(a and b)	-F	-n-propyl
B23(a and b)	-F	-cyclohexyl
B24(a and b)	-F	- <i>tert</i> -butoxy
B25(a and b)	-F	- <i>iso</i> -propoxy
B26(a and b)	-F	-CF ₃
B27(a and b)	-F	-OCF ₃
B28(a and b)	-F	-Cl
B29(a and b)	-F	-Br
B30(a and b)	-F	-I
B31(a and b)	-F	-n-butyl
B32(a and b)	-F	-n-propyl
B33(a and b)	-CH ₃	-H
B34(a and b)	-CH ₃	- <i>iso</i> -butyl
B35(a and b)	-CH ₃	- <i>tert</i> -butyl
B36(a and b)	-CH ₃	- <i>sec</i> -butyl
B37(a and b)	-CH ₃	- <i>iso</i> -propyl
B38(a and b)	-CH ₃	-n-propyl
B39(a and b)	-CH ₃	-cyclohexyl
B40(a and b)	-CH ₃	- <i>tert</i> -butoxy

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Compound	R ₁	R _{8a}
B41(a and b)	-CH ₃	- <i>iso</i> -propoxy
B42(a and b)	-CH ₃	-CF ₃
B43(a and b)	-CH ₃	-OCF ₃
B44(a and b)	-CH ₃	-Cl
B45(a and b)	-CH ₃	-Br
B46(a and b)	-CH ₃	-I
B47(a and b)	-CH ₃	-n-butyl
B48(a and b)	-CH ₃	-n-propyl
B49(a and b)	-CF ₃	-H
B50(a and b)	-CF ₃	- <i>tert</i> -butyl
B51(a and b)	-CF ₃	- <i>iso</i> -butyl
B52(a and b)	-CF ₃	- <i>sec</i> -butyl
B53(a and b)	-CF ₃	- <i>iso</i> -propyl
B54(a and b)	-CF ₃	-n-propyl
B55(a and b)	-CF ₃	-cyclohexyl
B56(a and b)	-CF ₃	- <i>tert</i> -butoxy
B57(a and b)	-CF ₃	- <i>iso</i> -propoxy
B58(a and b)	-CF ₃	-CF ₃
B59(a and b)	-CF ₃	-OCF ₃
B60(a and b)	-CF ₃	-Cl
B61(a and b)	-CF ₃	-Br
B62(a and b)	-CF ₃	-I
B63(a and b)	-CF ₃	-n-butyl
B64(a and b)	-CF ₃	-n-propyl
B65(a and b)	-CHF ₂	- <i>tert</i> -butyl
B66(a and b)	-CHF ₂	-H
B67(a and b)	-CHF ₂	- <i>iso</i> -butyl
B68(a and b)	-CHF ₂	- <i>sec</i> -butyl
B69(a and b)	-CHF ₂	- <i>iso</i> -propyl
B70(a and b)	-CHF ₂	-n-propyl
B71(a and b)	-CHF ₂	-cyclohexyl
B72(a and b)	-CHF ₂	- <i>tert</i> -butoxy
B73(a and b)	-CHF ₂	- <i>iso</i> -propoxy
B74(a and b)	-CHF ₂	-CF ₃
B75(a and b)	-CHF ₂	-OCF ₃
B76(a and b)	-CHF ₂	-Cl
B77(a and b)	-CHF ₂	-Br
B78(a and b)	-CHF ₂	-I

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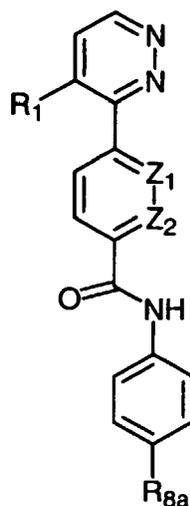
Compound	R ₁	R _{8a}
B79(a and b)	-CHF ₂	-n-butyl
B80(a and b)	-CHF ₂	-n-propyl
B81(a and b)	-Br	-H
B82(a and b)	-Br	- <i>tert</i> -butyl
B83(a and b)	-Br	- <i>iso</i> -butyl
B84(a and b)	-Br	- <i>sec</i> -butyl
B85(a and b)	-Br	- <i>iso</i> -propyl
B86(a and b)	-Br	-n-propyl
B87(a and b)	-Br	-cyclohexyl
B88(a and b)	-Br	- <i>tert</i> -butoxy
B89(a and b)	-Br	- <i>iso</i> -propoxy
B90(a and b)	-Br	-CF ₃
B91(a and b)	-Br	-OCF ₃
B92(a and b)	-Br	-Cl
B93(a and b)	-Br	-Br
B94(a and b)	-Br	-I
B95(a and b)	-Br	-n-butyl
B96(a and b)	-Br	-n-propyl
B97(a and b)	-I	- <i>tert</i> -butyl
B98(a and b)	-I	-H
B99(a and b)	-I	- <i>iso</i> -butyl
B100(a and b)	-I	- <i>sec</i> -butyl
B101(a and b)	-I	- <i>iso</i> -propyl
B102(a and b)	-I	-n-propyl
B103(a and b)	-I	-cyclohexyl
B104(a and b)	-I	- <i>tert</i> -butoxy
B105(a and b)	-I	- <i>iso</i> -propoxy
B106(a and b)	-I	-CF ₃
B107(a and b)	-I	-OCF ₃
B108(a and b)	-I	-Cl
B109(a and b)	-I	-Br
B110(a and b)	-I	-I
B111(a and b)	-I	-n-butyl
B112(a and b)	-I	-n-propyl

[0320] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

Table 3



(V)

and pharmaceutically acceptable salts thereof, where:

Compound	R ₁	R _{8a}
C1(a and b)	-Cl	-H
C2(a and b)	-Cl	- <i>tert</i> -butyl
C3(a and b)	-Cl	- <i>iso</i> -butyl
C4(a and b)	-Cl	- <i>sec</i> -butyl
C5(a and b)	-Cl	- <i>iso</i> -propyl
C6(a and b)	-Cl	- <i>n</i> -propyl
C7(a and b)	-Cl	-cyclohexyl
C8(a and b)	-Cl	- <i>tert</i> -butoxy
C9(a and b)	-Cl	- <i>iso</i> -propoxy
C10(a and b)	-Cl	-CF ₃
C11(a and b)	-Cl	-OCF ₃
C12(a and b)	-Cl	-Cl
C13(a and b)	-Cl	-Br
C14(a and b)	-Cl	-I
C15(a and b)	-Cl	- <i>n</i> -butyl
C16(a and b)	-Cl	- <i>n</i> -propyl
C17(a and b)	-F	-H
C18(a and b)	-F	- <i>tert</i> -butyl
C19(a and b)	-F	- <i>iso</i> -butyl
C20(a and b)	-F	- <i>sec</i> -butyl
C21(a and b)	-F	- <i>iso</i> -propyl

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Compound	R ₁	R _{8a}
C22(a and b)	-F	-n-propyl
C23(a and b)	-F	-cyclohexyl
C24(a and b)	-F	- <i>tert</i> -butoxy
C25(a and b)	-F	- <i>iso</i> -propoxy
C26(a and b)	-F	-CF ₃
C27(a and b)	-F	-OCF ₃
C28(a and b)	-F	-Cl
C29(a and b)	-F	-Br
C30(a and b)	-F	-I
C31(a and b)	-F	-n-butyl
C32(a and b)	-F	-n-propyl
C33(a and b)	-CH ₃	-H
C34(a and b)	-CH ₃	- <i>iso</i> -butyl
C35(a and b)	-CH ₃	- <i>tert</i> -butyl
C36(a and b)	-CH ₃	- <i>sec</i> -butyl
C37(a and b)	-CH ₃	- <i>iso</i> -propyl
C38(a and b)	-CH ₃	-n-propyl
C39(a and b)	-CH ₃	-cyclohexyl
C40(a and b)	-CH ₃	- <i>tert</i> -butoxy
C41(a and b)	-CH ₃	- <i>iso</i> -propoxy
C42(a and b)	-CH ₃	-CF ₃
C43(a and b)	-CH ₃	-OCF ₃
C44(a and b)	-CH ₃	-Cl
C45(a and b)	-CH ₃	-Br
C46(a and b)	-CH ₃	-I
C47(a and b)	-CH ₃	-n-butyl
C48(a and b)	-CH ₃	-n-propyl
C49(a and b)	-CF ₃	-H
C50(a and b)	-CF ₃	- <i>tert</i> -butyl
C51(a and b)	-CF ₃	- <i>iso</i> -butyl
C52(a and b)	-CF ₃	- <i>sec</i> -butyl
C53(a and b)	-CF ₃	- <i>iso</i> -propyl
C54(a and b)	-CF ₃	-n-propyl
C55(a and b)	-CF ₃	-cyclohexyl
C56(a and b)	-CF ₃	- <i>tert</i> -butoxy
C57(a and b)	-CF ₃	- <i>iso</i> -propoxy
C58(a and b)	-CF ₃	-CF ₃
C59(a and b)	-CF ₃	-OCF ₃

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Compound	R ₁	R _{8a}
C60(a and b)	-CF ₃	-Cl
C61(a and b)	-CF ₃	-Br
C62(a and b)	-CF ₃	-I
C63(a and b)	-CF ₃	-n-butyl
C64(a and b)	-CF ₃	-n-propyl
C65(a and b)	-CHF ₂	- <i>tert</i> -butyl
C66(a and b)	-CHF ₂	-H
C67(a and b)	-CHF ₂	- <i>iso</i> -butyl
C68(a and b)	-CHF ₂	- <i>sec</i> -butyl
C69(a and b)	-CHF ₂	- <i>iso</i> -propyl
C70(a and b)	-CHF ₂	-n-propyl
C71(a and b)	-CHF ₂	-cyclohexyl
C72(a and b)	-CHF ₂	- <i>tert</i> -butoxy
C73(a and b)	-CHF ₂	- <i>iso</i> -propoxy
C74(a and b)	-CHF ₂	-CF ₃
C75(a and b)	-CHF ₂	-OCF ₃
C76(a and b)	-CHF ₂	-Cl
C77(a and b)	-CHF ₂	-Br
C78(a and b)	-CHF ₂	-I
C79(a and b)	-CHF ₂	-n-butyl
C80(a and b)	-CHF ₂	-n-propyl
C81(a and b)	-Br	-H
C82(a and b)	-Br	- <i>tert</i> -butyl
C83(a and b)	-Br	- <i>iso</i> -butyl
C84(a and b)	-Br	- <i>sec</i> -butyl
C85(a and b)	-Br	- <i>iso</i> -propyl
C86(a and b)	-Br	-n-propyl
C87(a and b)	-Br	-cyclohexyl
C88(a and b)	-Br	- <i>tert</i> -butoxy
C89(a and b)	-Br	- <i>iso</i> -propoxy
C90(a and b)	-Br	-CF ₃
C91(a and b)	-Br	-OCF ₃
C92(a and b)	-Br	-Cl
C93(a and b)	-Br	-Br
C94(a and b)	-Br	-I
C95(a and b)	-Br	-n-butyl
C96(a and b)	-Br	-n-propyl
C97(a and b)	-I	- <i>tert</i> -butyl

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(continued)

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Compound	R ₁	R _{8a}
C98(a and b)	-I	-H
C99(a and b)	-I	- <i>iso</i> -butyl
C100(a and b)	-I	- <i>sec</i> -butyl
C101(a and b)	-I	- <i>iso</i> -propyl
C102(a and b)	-I	- <i>n</i> -propyl
C103(a and b)	-I	-cyclohexyl
C104(a and b)	-I	- <i>tert</i> -butoxy
C105(a and b)	-I	- <i>iso</i> -propoxy
C106(a and b)	-I	-CF ₃
C107(a and b)	-I	-OCF ₃
C108(a and b)	-I	-Cl
C109(a and b)	-I	-Br
C110(a and b)	-I	-I
C111(a and b)	-I	- <i>n</i> -butyl
C112(a and b)	-I	- <i>n</i> -propyl

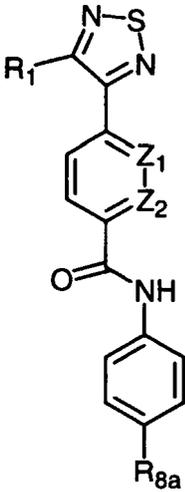
[0321] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

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Table 4

 <p>(VI)</p>		
and pharmaceutically acceptable salts thereof, where:		
Compound	R ₁	R _{8a}
D1(a and b)	-Cl	-H

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Compound	R ₁	R _{8a}
D2(a and b)	-Cl	- <i>tert</i> -butyl
D3(a and b)	-Cl	- <i>iso</i> -butyl
D4(a and b)	-Cl	- <i>sec</i> -butyl
D5(a and b)	-Cl	- <i>iso</i> -propyl
D6(a and b)	-Cl	-n-propyl
D7(a and b)	-Cl	-cyclohexyl
D8(a and b)	-Cl	- <i>tert</i> -butoxy
D9(a and b)	-Cl	- <i>iso</i> -propoxy
D10(a and b)	-Cl	-CF ₃
D11(a and b)	-Cl	-OCF ₃
D12(a and b)	-Cl	-Cl
D13(a and b)	-Cl	-Br
D14(a and b)	-Cl	-I
D15(a and b)	-Cl	-n-butyl
D16(a and b)	-Cl	-n-propyl
D17(a and b)	-F	-H
D18(a and b)	-F	- <i>tert</i> -butyl
D19(a and b)	-F	- <i>iso</i> -butyl
D20(a and b)	-F	- <i>sec</i> -butyl
D21(a and b)	-F	- <i>iso</i> -propyl
D22(a and b)	-F	-n-propyl
D23(a and b)	-F	-cyclohexyl
D24(a and b)	-F	- <i>tert</i> -butoxy
D25(a and b)	-F	- <i>iso</i> -propoxy
D26(a and b)	-F	-CF ₃
D27(a and b)	-F	-OCF ₃
D28(a and b)	-F	-Cl
D29(a and b)	-F	-Br
D30(a and b)	-F	-I
D31(a and b)	-F	-n-butyl
D32(a and b)	-F	-n-propyl
D33(a and b)	-CH ₃	-H
D34(a and b)	-CH ₃	- <i>iso</i> -butyl
D35(a and b)	-CH ₃	- <i>tert</i> -butyl
D36(a and b)	-CH ₃	- <i>sec</i> -butyl
D37(a and b)	-CH ₃	- <i>iso</i> -propyl
D38(a and b)	-CH ₃	-n-propyl
D39(a and b)	-CH ₃	-cyclohexyl

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Compound	R ₁	R _{8a}
D40(a and b)	-CH ₃	- <i>tert</i> -butoxy
D41(a and b)	-CH ₃	- <i>iso</i> -propoxy
D42(a and b)	-CH ₃	-CF ₃
D43(a and b)	-CH ₃	-OCF ₃
D44(a and b)	-CH ₃	-Cl
D45(a and b)	-CH ₃	-Br
D46(a and b)	-CH ₃	-I
D47(a and b)	-CH ₃	-n-butyl
D48(a and b)	-CH ₃	-n-propyl
D49(a and b)	-CF ₃	-H
D50(a and b)	-CF ₃	- <i>tert</i> -butyl
D51(a and b)	-CF ₃	- <i>iso</i> -butyl
D52(a and b)	-CF ₃	- <i>sec</i> -butyl
D53(a and b)	-CF ₃	- <i>iso</i> -propyl
D54(a and b)	-CF ₃	-n-propyl
D55(a and b)	-CF ₃	-cyclohexyl
D56(a and b)	-CF ₃	- <i>tert</i> -butoxy
D57(a and b)	-CF ₃	- <i>iso</i> -propoxy
D58(a and b)	-CF ₃	-CF ₃
D59(a and b)	-CF ₃	-OCF ₃
D60(a and b)	-CF ₃	-Cl
D61 (a and b)	-CF ₃	-Br
D62(a and b)	-CF ₃	-I
D63(a and b)	-CF ₃	-n-butyl
D64(a and b)	-CF ₃	-n-propyl
D65(a and b)	-CHF ₂	- <i>tert</i> -butyl
D66(a and b)	-CHF ₂	-H
D67(a and b)	-CHF ₂	- <i>iso</i> -butyl
D68(a and b)	-CHF ₂	- <i>sec</i> -butyl
D69(a and b)	-CHF ₂	- <i>iso</i> -propyl
D70(a and b)	-CHF ₂	-n-propyl
D71(a and b)	-CHF ₂	-cyclohexyl
D72(a and b)	-CHF ₂	- <i>tert</i> -butoxy
D73(a and b)	-CHF ₂	- <i>iso</i> -propoxy
D74(a and b)	-CHF ₂	-CF ₃
D75(a and b)	-CHF ₂	-OCF ₃
D76(a and b)	-CHF ₂	-Cl
D77(a and b)	-CHF ₂	-Br

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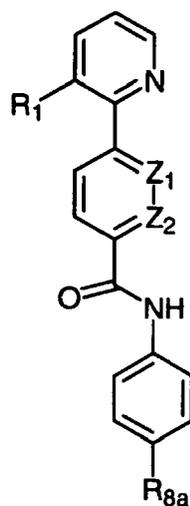
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Compound	R ₁	R _{8a}
D78(a and b)	-CHF ₂	-I
D79(a and b)	-CHF ₂	-n-butyl
D80(a and b)	-CHF ₂	-n-propyl
D81(a and b)	-Br	-H
D82(a and b)	-Br	- <i>tert</i> -butyl
D83(a and b)	-Br	- <i>iso</i> -butyl
D84(a and b)	-Br	- <i>sec</i> -butyl
D85(a and b)	-Br	- <i>iso</i> -propyl
D86(a and b)	-Br	-n-propyl
D87(a and b)	-Br	-cyclohexyl
D88(a and b)	-Br	- <i>tert</i> -butoxy
D89(a and b)	-Br	- <i>iso</i> -propoxy
D90(a and b)	-Br	-CF ₃
D91(a and b)	-Br	-OCF ₃
D92(a and b)	-Br	-Cl
D93(a and b)	-Br	-Br
D94(a and b)	-Br	-I
D95(a and b)	-Br	-n-butyl
D96(a and b)	-Br	-n-propyl
D97(a and b)	-I	- <i>tert</i> -butyl
D98(a and b)	-I	-H
D99(a and b)	-I	- <i>iso</i> -butyl
D100(a and b)	-I	- <i>sec</i> -butyl
D101(a and b)	-I	- <i>iso</i> -propyl
D102(a and b)	-I	-n-propyl
D103(a and b)	-I	-cyclohexyl
D104(a and b)	-I	- <i>tert</i> -butoxy
D105(a and b)	-I	- <i>iso</i> -propoxy
D106(a and b)	-I	-CF ₃
D107(a and b)	-I	-OCF ₃
D108(a and b)	-I	-Cl
D109(a and b)	-I	-Br
D110(a and b)	-I	-I
D111(a and b)	-I	-n-butyl
D112(a and b)	-I	-n-propyl

[0322] In the column labeled "Compound":
 (a) means Z₁ is CH and Z₂ is N; and
 (b) means Z₁ is N and Z₂ is CH.

Table 5



(VII)

and pharmaceutically acceptable salts thereof,
where:

Compound	R ₁	R _{8a}
E1(a and b)	-Cl	-H
E2(a and b)	-Cl	- <i>tert</i> -butyl
E3(a and b)	-Cl	- <i>iso</i> -butyl
E4(a and b)	-Cl	- <i>sec</i> -butyl
E5(a and b)	-Cl	- <i>iso</i> -propyl
E6(a and b)	-Cl	- <i>n</i> -propyl
E7(a and b)	-Cl	-cyclohexyl
E8(a and b)	-Cl	- <i>tert</i> -butoxy
E9(a and b)	-Cl	- <i>iso</i> -propoxy
E10(a and b)	-Cl	-CF ₃
E11(a and b)	-Cl	-OCF ₃
E12(a and b)	-Cl	-Cl
E13(a and b)	-Cl	-Br
E14(a and b)	-Cl	-I
E15(a and b)	-Cl	- <i>n</i> -butyl
E16(a and b)	-Cl	- <i>n</i> -propyl
E17(a and b)	-F	-H
E18(a and b)	-F	- <i>tert</i> -butyl
E19(a and b)	-F	- <i>iso</i> -butyl
E20(a and b)	-F	- <i>sec</i> -butyl
E21(a and b)	-F	- <i>iso</i> -propyl

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(continued)

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Compound	R ₁	R _{8a}
E22(a and b)	-F	-n-propyl
E23(a and b)	-F	-cyclohexyl
E24(a and b)	-F	- <i>tert</i> -butoxy
E25(a and b)	-F	- <i>iso</i> -propoxy
E26(a and b)	-F	-CF ₃
E27(a and b)	-F	-OCF ₃
E28(a and b)	-F	-Cl
E29(a and b)	-F	-Br
E30(a and b)	-F	-I
E31(a and b)	-F	-n-butyl
E32(a and b)	-F	-n-propyl
E33(a and b)	-CH ₃	-H
E34(a and b)	-CH ₃	- <i>iso</i> -butyl
E35(a and b)	-CH ₃	- <i>tert</i> -butyl
E36(a and b)	-CH ₃	- <i>sec</i> -butyl
E37(a and b)	-CH ₃	- <i>iso</i> -propyl
E38(a and b)	-CH ₃	-n-propyl
E39(a and b)	-CH ₃	-cyclohexyl
E40(a and b)	-CH ₃	- <i>tert</i> -butoxy
E41(a and b)	-CH ₃	- <i>iso</i> -propoxy
E42(a and b)	-CH ₃	-CF ₃
E43(a and b)	-CH ₃	-OCF ₃
E44(a and b)	-CH ₃	-Cl
E45(a and b)	-CH ₃	-Br
E46(a and b)	-CH ₃	-I
E47(a and b)	-CH ₃	-n-butyl
E48(a and b)	-CH ₃	-n-propyl
E49(a and b)	-CF ₃	-H
E50(a and b)	-CF ₃	- <i>tert</i> -butyl
E51(a and b)	-CF ₃	- <i>iso</i> -butyl
E52(a and b)	-CF ₃	- <i>sec</i> -butyl
E53(a and b)	-CF ₃	- <i>iso</i> -propyl
E54(a and b)	-CF ₃	-n-propyl
E55(a and b)	-CF ₃	-cyclohexyl
E56(a and b)	-CF ₃	- <i>tert</i> -butoxy
E57(a and b)	-CF ₃	- <i>iso</i> -propoxy
E58(a and b)	-CF ₃	-CF ₃
E59(a and b)	-CF ₃	-OCF ₃

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(continued)

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Compound	R ₁	R _{8a}
E60(a and b)	-CF ₃	-Cl
E61(a and b)	-CF ₃	-Br
E62(a and b)	-CF ₃	-I
E63(a and b)	-CF ₃	-n-butyl
E64(a and b)	-CF ₃	-n-propyl
E65(a and b)	-CHF ₂	- <i>tert</i> -butyl
E66(a and b)	-CHF ₂	-H
E67(a and b)	-CHF ₂	- <i>iso</i> -butyl
E68(a and b)	-CHF ₂	- <i>sec</i> -butyl
E69(a and b)	-CHF ₂	- <i>iso</i> -propyl
E70(a and b)	-CHF ₂	-n-propyl
E71(a and b)	-CHF ₂	-cyclohexyl
E72(a and b)	-CHF ₂	- <i>tert</i> -butoxy
E73(a and b)	-CHF ₂	- <i>iso</i> -propoxy
E74(a and b)	-CHF ₂	-CF ₃
E75(a and b)	-CHF ₂	-OCF ₃
E76(a and b)	-CHF ₂	-Cl
E77(a and b)	-CHF ₂	-Br
E78(a and b)	-CHF ₂	-I
E79(a and b)	-CHF ₂	-n-butyl
E80(a and b)	-CHF ₂	-n-propyl
E81(a and b)	-Br	-H
E82(a and b)	-Br	- <i>tert</i> -butyl
E83(a and b)	-Br	- <i>iso</i> -butyl
E84(a and b)	-Br	- <i>sec</i> -butyl
E85(a and b)	-Br	- <i>iso</i> -propyl
E86(a and b)	-Br	-n-propyl
E87(a and b)	-Br	-cyclohexyl
E88(a and b)	-Br	- <i>tert</i> -butoxy
E89(a and b)	-Br	- <i>iso</i> -propoxy
E90(a and b)	-Br	-CF ₃
E91(a and b)	-Br	-OCF ₃
E92(a and b)	-Br	-Cl
E93(a and b)	-Br	-Br
E94(a and b)	-Br	-I
E95(a and b)	-Br	-n-butyl
E96(a and b)	-Br	-n-propyl
E97(a and b)	-I	- <i>tert</i> -butyl

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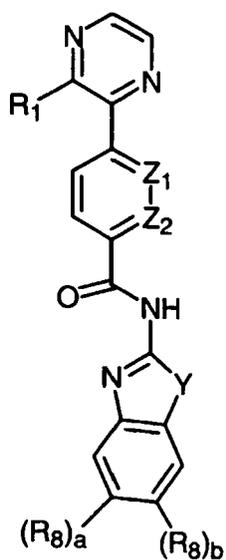
Compound	R ₁	R _{8a}
E98(a and b)	-I	-H
E99(a and b)	-I	- <i>iso</i> -butyl
E100(a and b)	-I	- <i>sec</i> -butyl
E101(a and b)	-I	- <i>iso</i> -propyl
E102(a and b)	-I	- <i>n</i> -propyl
E103(a and b)	-I	-cyclohexyl
E104(a and b)	-I	- <i>tert</i> -butoxy
E105(a and b)	-I	- <i>iso</i> -propoxy
E106(a and b)	-I	-CF ₃
E107(a and b)	-I	-OCF ₃
E108(a and b)	-I	-Cl
E109(a and b)	-I	-Br
E110(a and b)	-I	-I
E111(a and b)	-I	- <i>n</i> -butyl
E112(a and b)	-I	- <i>n</i> -propyl

[0323] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

Table 6



(VIII)

and pharmaceutically acceptable salts thereof, where:

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F1(a and b)	S	-Cl	-Cl	-H
F2(a and b)	S	-Cl	-Br	-H
F3(a and b)	S	-Cl	-F	-H
F4(a and b)	S	-Cl	-CH ₃	-H
F5(a and b)	S	-Cl	-CF ₃	-H
F6(a and b)	S	-Cl	-OCH ₃	-H
F7(a and b)	S	-Cl	-OCH ₂ CH ₃	-H
F8(a and b)	S	-Cl	-OCF ₃	-H
F9(a and b)	S	-Cl	- <i>tert</i> -butyl	-H
F10(a and b)	S	-Cl	- <i>iso</i> -propyl	-H
F11(a and b)	S	-Cl	-CH ₃	-CH ₃
F12(a and b)	S	-Cl	-H	-H
F13(a and b)	S	-Cl	-H	-Cl
F14(a and b)	S	-Cl	-H	-Br
F15(a and b)	S	-Cl	-H	-F
F16(a and b)	S	-Cl	-H	-CH ₃
F17(a and b)	S	-Cl	-H	-CF ₃
F18(a and b)	S	-Cl	-H	-OCH ₃
F19(a and b)	S	-Cl	-H	-OCH ₂ CH ₃
F20(a and b)	S	-Cl	-H	-OCF ₃
F21(a and b)	S	-Cl	-H	- <i>tert</i> -butyl
F22(a and b)	S	-Cl	-H	- <i>iso</i> -propyl
F23(a and b)	S	-CH ₃	-Cl	-H
F24(a and b)	S	-CH ₃	-Br	-H
F25(a and b)	S	-CH ₃	-F	-H
F26(a and b)	S	-CH ₃	-CH ₃	-H
F27(a and b)	S	-CH ₃	-CF ₃	-H
F28(a and b)	S	-CH ₃	-OCH ₃	-H
F29(a and b)	S	-CH ₃	-OCH ₂ CH ₃	-H
F30(a and b)	S	-CH ₃	-OCF ₃	-H
F31(a and b)	S	-CH ₃	- <i>tert</i> -butyl	-H
F32(a and b)	S	-CH ₃	- <i>iso</i> -propyl	-H
F33(a and b)	S	-CH ₃	-CH ₃	-CH ₃
F34(a and b)	S	-CH ₃	-H	-H
F35(a and b)	S	-CH ₃	-H	-Cl
F36(a and b)	S	-CH ₃	-H	-Br
F37(a and b)	S	-CH ₃	-H	-F
F38(a and b)	S	-CH ₃	-H	-CH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F39(a and b)	S	-CH ₃	-H	-CF ₃
F40(a and b)	S	-CH ₃	-H	-OCH ₃
F41(a and b)	S	-CH ₃	-H	-OCH ₂ CH ₃
F42(a and b)	S	-CH ₃	-H	-OCF ₃
F43(a and b)	S	-CH ₃	-H	- <i>tert</i> -butyl
F44(a and b)	S	-CH ₃	-H	- <i>iso</i> -propyl
F45(a and b)	S	-CF ₃	-Cl	-H
F46(a and b)	S	-CF ₃	-Br	-H
F47(a and b)	S	-CF ₃	-F	-H
F48(a and b)	S	-CF ₃	-CH ₃	-H
F49(a and b)	S	-CF ₃	-CF ₃	-H
F50(a and b)	S	-CF ₃	-OCH ₃	-H
F51(a and b)	S	-CF ₃	-OCH ₂ CH ₃	-H
F52(a and b)	S	-CF ₃	-OCF ₃	-H
F53(a and b)	S	-CF ₃	- <i>tert</i> -butyl	-H
F54(a and b)	S	-CF ₃	- <i>iso</i> -propyl	-H
F55(a and b)	S	-CF ₃	-CH ₃	-CH ₃
F56(a and b)	S	-CF ₃	-H	-H
F57(a and b)	S	-CF ₃	-H	-Cl
F58(a and b)	S	-CF ₃	-H	-Br
F59(a and b)	S	-CF ₃	-H	-F
F60(a and b)	S	-CF ₃	-H	-CH ₃
F61(a and b)	S	-CF ₃	-H	-CF ₃
F62(a and b)	S	-CF ₃	-H	-OCH ₃
F63(a and b)	S	-CF ₃	-H	-OCH ₂ CH ₃
F64(a and b)	S	-CF ₃	-H	-OCF ₃
F65(a and b)	S	-CF ₃	-H	- <i>tert</i> -butyl
F66(a and b)	S	-CF ₃	-H	- <i>iso</i> -propyl
F67(a and b)	S	-CHF ₂	-Cl	-H
F68(a and b)	S	-CHF ₂	-Br	-H
F69(a and b)	S	-CHF ₂	-F	-H
F70(a and b)	S	-CHF ₂	-CH ₃	-H
F71(a and b)	S	-CHF ₂	-CF ₃	-H
F72(a and b)	S	-CHF ₂	-OCH ₃	-H
F73(a and b)	S	-CHF ₂	-OCH ₂ CH ₃	-H
F74(a and b)	S	-CHF ₂	-OCF ₃	-H
F75(a and b)	S	-CHF ₂	- <i>tert</i> -butyl	-H
F76(a and b)	S	-CHF ₂	- <i>iso</i> -propyl	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F77(a and b)	S	-CHF ₂	-CH ₃	-CH ₃
F78(a and b)	S	-CHF ₂	-H	-H
F79(a and b)	S	-CHF ₂	-H	-Cl
F80(a and b)	S	-CHF ₂	-H	-Br
F81(a and b)	S	-CHF ₂	-H	-F
F82(a and b)	S	-CHF ₂	-H	-CH ₃
F83(a and b)	S	-CHF ₂	-H	-CF ₃
F84(a and b)	S	-CHF ₂	-H	-OCH ₃
F85(a and b)	S	-CHF ₂	-H	-OCH ₂ CH ₃
F86(a and b)	S	-CHF ₂	-H	-OCF ₃
F87(a and b)	S	-CHF ₂	-H	- <i>tert</i> -butyl
F88(a and b)	S	-CHF ₂	-H	- <i>iso</i> -propyl
F89(a and b)	S	-Br	-Br	-H
F90(a and b)	S	-Br	-Cl	-H
F91(a and b)	S	-Br	-F	-H
F92(a and b)	S	-Br	-CH ₃	-H
F93(a and b)	S	-Br	-CF ₃	-H
F94(a and b)	S	-Br	-OCH ₃	-H
F95(a and b)	S	-Br	-OCH ₂ CH ₃	-H
F96(a and b)	S	-Br	-OCF ₃	-H
F97(a and b)	S	-Br	- <i>tert</i> -butyl	-H
F98(a and b)	S	-Br	- <i>iso</i> -propyl	-H
F99(a and b)	S	-Br	-CH ₃	-CH ₃
F100(a and b)	S	-Br	-H	-H
F101(a and b)	S	-Br	-H	-Cl
F102(a and b)	S	-Br	-H	-Br
F103(a and b)	S	-Br	-H	-F
F104(a and b)	S	-Br	-H	-CH ₃
F105(a and b)	S	-Br	-H	-CF ₃
F106(a and b)	S	-Br	-H	-OCH ₃
F107(a and b)	S	-Br	-H	-OCH ₂ CH ₃
F108(a and b)	S	-Br	-H	-OCF ₃
F109(a and b)	S	-Br	-H	- <i>tert</i> -butyl
F110(a and b)	S	-Br	-H	- <i>iso</i> -propyl
F111(a and b)	S	-I	-Cl	-H
F112(a and b)	S	-I	-Br	-H
F113(a and b)	S	-I	-F	-H
F114(a and b)	S	-I	-CH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F115(a and b)	S	-I	-CF ₃	-H
F116(a and b)	S	-I	-OCH ₃	-H
F117(a and b)	S	-I	-OCH ₂ CH ₃	-H
F118(a and b)	S	-I	-OCF ₃	-H
F119(a and b)	S	-I	- <i>tert</i> -butyl	-H
F120(a and b)	S	-I	- <i>iso</i> -propyl	-H
F121(a and b)	S	-I	-CH ₃	-CH ₃
F122(a and b)	S	-I	-H	-H
F123(a and b)	S	-I	-H	-Cl
F124(a and b)	S	-I	-H	-Br
F125(a and b)	S	-I	-H	-F
F126(a and b)	S	-I	-H	-CH ₃
F127(a and b)	S	-I	-H	-CF ₃
F128(a and b)	S	-I	-H	-OCH ₃
F129(a and b)	S	-I	-H	-OCH ₂ CH ₃
F130(a and b)	S	-I	-H	-OCF ₃
F131(a and b)	S	-I	-H	- <i>tert</i> -butyl
F132(a and b)	S	-I	-H	- <i>iso</i> -propyl
F133(a and b)	O	-Cl	-Cl	-H
F134(a and b)	O	-Cl	-Br	-H
F135(a and b)	O	-Cl	-F	-H
F136(a and b)	O	-Cl	-CH ₃	-H
F137(a and b)	O	-Cl	-CF ₃	-H
F138(a and b)	O	-Cl	-OCH ₃	-H
F139(a and b)	O	-Cl	-OCH ₂ CH ₃	-H
F140(a and b)	O	-Cl	-OCF ₃	-H
F141(a and b)	O	-Cl	- <i>tert</i> -butyl	-H
F142(a and b)	O	-Cl	- <i>iso</i> -propyl	-H
F143(a and b)	O	-Cl	-CH ₃	-CH ₃
F144(a and b)	O	-Cl	-H	-H
F145(a and b)	O	-Cl	-H	-CH ₃
F146(a and b)	O	-Cl	-H	-Cl
F147(a and b)	O	-Cl	-H	-Br
F148(a and b)	O	-Cl	-H	-F
F149(a and b)	O	-Cl	-H	-CF ₃
F150(a and b)	O	-Cl	-H	-OCH ₃
F151(a and b)	O	-Cl	-H	-OCH ₂ CH ₃
F152(a and b)	O	-Cl	-H	-OCF ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F153(a and b)	O	-Cl	-H	- <i>tert</i> -butyl
F154(a and b)	O	-Cl	-H	- <i>iso</i> -propyl
F155(a and b)	O	-CH ₃	-Cl	-H
F156(a and b)	O	-CH ₃	-Br	-H
F157(a and b)	O	-CH ₃	-F	-H
F158(a and b)	O	-CH ₃	-CH ₃	-H
F159(a and b)	O	-CH ₃	-CF ₃	-H
F160(a and b)	O	-CH ₃	-OCH ₃	-H
F161(a and b)	O	-CH ₃	-OCH ₂ CH ₃	-H
F162(a and b)	O	-CH ₃	-OCF ₃	-H
F163(a and b)	O	-CH ₃	- <i>tert</i> -butyl	-H
F164(a and b)	O	-CH ₃	- <i>iso</i> -propyl	-H
F165(a and b)	O	-CH ₃	-CH ₃	-CH ₃
F166(a and b)	O	-CH ₃	-H	-H
F167(a and b)	O	-CH ₃	-H	-Cl
F168(a and b)	O	-CH ₃	-H	-Br
F169(a and b)	O	-CH ₃	-H	-F
F170(a and b)	O	-CH ₃	-H	-CH ₃
F171(a and b)	O	-CH ₃	-H	-CF ₃
F172(a and b)	O	-CH ₃	-H	-OCH ₃
F173(a and b)	O	-CH ₃	-H	-OCH ₂ CH ₃
F174(a and b)	O	-CH ₃	-H	-OCF ₃
F175(a and b)	O	-CH ₃	-H	- <i>tert</i> -butyl
F176(a and b)	O	-CH ₃	-H	- <i>iso</i> -propyl
F177(a and b)	O	-CF ₃	-Cl	-H
F178(a and b)	O	-CF ₃	-Br	-H
F179(a and b)	O	-CF ₃	-F	-H
F180(a and b)	O	-CF ₃	-CH ₃	-H
F181(a and b)	O	-CF ₃	-CF ₃	-H
F182(a and b)	O	-CF ₃	-OCH ₃	-H
F183(a and b)	O	-CF ₃	-OCH ₂ CH ₃	-H
F184(a and b)	O	-CF ₃	-OCF ₃	-H
F185(a and b)	O	-CF ₃	- <i>tert</i> -butyl	-H
F186(a and b)	O	-CF ₃	- <i>iso</i> -propyl	-H
F187(a and b)	O	-CF ₃	-CH ₃	-CH ₃
F188(a and b)	O	-CF ₃	-H	-H
F189(a and b)	O	-CF ₃	-H	-Cl
F190(a and b)	O	-CF ₃	-H	-Br

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F191(a and b)	O	-CF ₃	-H	-F
F192(a and b)	O	-CF ₃	-H	-CH ₃
F193(a and b)	O	-CF ₃	-H	-CF ₃
F194(a and b)	O	-CF ₃	-H	-OCH ₃
F195(a and b)	O	-CF ₃	-H	-OCH ₂ CH ₃
F196(a and b)	O	-CF ₃	-H	-OCF ₃
F197(a and b)	O	-CF ₃	-H	- <i>tert</i> -butyl
F198(a and b)	O	-CF ₃	-H	- <i>iso</i> -propyl
F199(a and b)	O	-CHF ₂	-Cl	-H
F200(a and b)	O	-CHF ₂	-Br	-H
F201(a and b)	O	-CHF ₂	-F	-H
F202(a and b)	O	-CHF ₂	-CH ₃	-H
F203(a and b)	O	-CHF ₂	-CF ₃	-H
F204(a and b)	O	-CHF ₂	-OCH ₃	-H
F205(a and b)	O	-CHF ₂	-OCH ₂ CH ₃	-H
F206(a and b)	O	-CHF ₂	-OCF ₃	-H
F207(a and b)	O	-CHF ₂	- <i>tert</i> -butyl	-H
F208(a and b)	O	-CHF ₂	- <i>iso</i> -propyl	-H
F209(a and b)	O	-CHF ₂	-CH ₃	-CH ₃
F210(a and b)	O	-CHF ₂	-H	-H
F211(a and b)	O	-CHF ₂	-H	-Cl
F212(a and b)	O	-CHF ₂	-H	-Br
F213(a and b)	O	-CHF ₂	-H	-F
F214(a and b)	O	-CHF ₂	-H	-CH ₃
F215(a and b)	O	-CHF ₂	-H	-CF ₃
F216(a and b)	O	-CHF ₂	-H	-OCH ₃
F217(a and b)	O	-CHF ₂	-H	-OCH ₂ CH ₃
F218(a and b)	O	-CHF ₂	-H	-OCF ₃
F219(a and b)	O	-CHF ₂	-H	- <i>tert</i> -butyl
F220(a and b)	O	-CHF ₂	-H	- <i>iso</i> -propyl
F221(a and b)	O	-Br	-Br	-H
F222(a and b)	O	-Br	-Cl	-H
F223(a and b)	O	-Br	-F	-H
F224(a and b)	O	-Br	-CH ₃	-H
F225(a and b)	O	-Br	-CF ₃	-H
F226(a and b)	O	-Br	-OCH ₃	-H
F227(a and b)	O	-Br	-OCH ₂ CH ₃	-H
F228(a and b)	O	-Br	-OCF ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F229(a and b)	O	-Br	- <i>tert</i> -butyl	-H
F230(a and b)	O	-Br	- <i>iso</i> -propyl	-H
F231(a and b)	O	-Br	-CH ₃	-CH ₃
F232(a and b)	O	-Br	-H	-H
F233(a and b)	O	-Br	-H	-Cl
F234(a and b)	O	-Br	-H	-Br
F235(a and b)	O	-Br	-H	-F
F236(a and b)	O	-Br	-H	-CH ₃
F237(a and b)	O	-Br	-H	-CF ₃
F238(a and b)	O	-Br	-H	-OCH ₃
F239(a and b)	O	-Br	-H	-OCH ₂ CH ₃
F240(a and b)	O	-Br	-H	-OCF ₃
F241(a and b)	O	-Br	-H	- <i>tert</i> -butyl
F242(a and b)	O	-Br	-H	- <i>iso</i> -propyl
F243(a and b)	O	-I	-Cl	-H
F244(a and b)	O	-I	-Br	-H
F245(a and b)	O	-I	-F	-H
F246(a and b)	O	-I	-CH ₃	-H
F247(a and b)	O	-I	-CF ₃	-H
F248(a and b)	O	-I	-OCH ₃	-H
F249(a and b)	O	-I	-OCH ₂ CH ₃	-H
F250(a and b)	O	-I	-OCF ₃	-H
F251(a and b)	O	-I	- <i>tert</i> -butyl	-H
F252(a and b)	O	-I	- <i>iso</i> -propyl	-H
F253(a and b)	O	-I	-CH ₃	-CH ₃
F254(a and b)	O	-I	-H	-H
F255(a and b)	O	-I	-H	-Cl
F256(a and b)	O	-I	-H	-Br
F257(a and b)	O	-I	-H	-F
F258(a and b)	O	-I	-H	-CH ₃
F259(a and b)	O	-I	-H	-CF ₃
F260(a and b)	O	-I	-H	-OCH ₃
F261(a and b)	O	-I	-H	-OCH ₂ CH ₃
F262(a and b)	O	-I	-H	-OCF ₃
F263(a and b)	O	-I	-H	- <i>tert</i> -butyl
F264(a and b)	O	-I	-H	- <i>iso</i> -propyl
F265(a and b)	NH	-Cl	-Cl	-H
F266(a and b)	NH	-Cl	-Br	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F267(a and b)	NH	-Cl	-F	-H
F268(a and b)	NH	-Cl	-CH ₃	-H
F269(a and b)	NH	-Cl	-CF ₃	-H
F270(a and b)	NH	-Cl	-OCH ₃	-H
F271(a and b)	NH	-Cl	-OCH ₂ CH ₃	-H
F272(a and b)	NH	-Cl	-OCF ₃	-H
F273(a and b)	NH	-Cl	- <i>tert</i> -butyl	-H
F274(a and b)	NH	-Cl	- <i>iso</i> -propyl	-H
F275(a and b)	NH	-Cl	-CH ₃	-CH ₃
F276(a and b)	NH	-Cl	-H	-H
F277(a and b)	NH	-Cl	-H	-CH ₃
F278(a and b)	NH	-Cl	-H	-Cl
F279(a and b)	NH	-Cl	-H	-Br
F280(a and b)	NH	-Cl	-H	-F
F281(a and b)	NH	-Cl	-H	-CF ₃
F282(a and b)	NH	-Cl	-H	-OCH ₃
F283(a and b)	NH	-Cl	-H	-OCH ₂ CH ₃
F284(a and b)	NH	-Cl	-H	-OCF ₃
F285(a and b)	NH	-Cl	-H	- <i>tert</i> -butyl
F286(a and b)	NH	-Cl	-H	- <i>iso</i> -propyl
F287(a and b)	NH	-CH ₃	-Cl	-H
F288(a and b)	NH	-CH ₃	-Br	-H
F289(a and b)	NH	-CH ₃	-F	-H
F290(a and b)	NH	-CH ₃	-CH ₃	-H
F291(a and b)	NH	-CH ₃	-CF ₃	-H
F292(a and b)	NH	-CH ₃	-OCH ₃	-H
F293(a and b)	NH	-CH ₃	-OCH ₂ CH ₃	-H
F294(a and b)	NH	-CH ₃	-OCF ₃	-H
F295(a and b)	NH	-CH ₃	- <i>tert</i> -butyl	-H
F296(a and b)	NH	-CH ₃	- <i>iso</i> -propyl	-H
F297(a and b)	NH	-CH ₃	-CH ₃	-CH ₃
F298(a and b)	NH	-CH ₃	-H	-H
F299(a and b)	NH	-CH ₃	-H	-Cl
F300(a and b)	NH	-CH ₃	-H	-Br
F301(a and b)	NH	-CH ₃	-H	-F
F302(a and b)	NH	-CH ₃	-H	-CH ₃
F303(a and b)	NH	-CH ₃	-H	-CF ₃
F304(a and b)	NH	-CH ₃	-H	-OCH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F305(a and b)	NH	-CH ₃	-H	-OCH ₂ CH ₃
F306(a and b)	NH	-CH ₃	-H	-OCF ₃
F307(a and b)	NH	-CH ₃	-H	- <i>tert</i> -butyl
F308(a and b)	NH	-CH ₃	-H	- <i>iso</i> -propyl
F309(a and b)	NH	-CF ₃	-Cl	-H
F310(a and b)	NH	-CF ₃	-Br	-H
F311(a and b)	NH	-CF ₃	-F	-H
F312(a and b)	NH	-CF ₃	-CH ₃	-H
F313(a and b)	NH	-CF ₃	-CF ₃	-H
F314(a and b)	NH	-CF ₃	-OCH ₃	-H
F315(a and b)	NH	-CF ₃	-OCH ₂ CH ₃	-H
F316(a and b)	NH	-CF ₃	-OCF ₃	-H
F317(a and b)	NH	-CF ₃	- <i>tert</i> -butyl	-H
F318(a and b)	NH	-CF ₃	- <i>iso</i> -propyl	-H
F319(a and b)	NH	-CF ₃	-CH ₃	-CH ₃
F320(a and b)	NH	-CF ₃	-H	-H
F321(a and b)	NH	-CF ₃	-H	-Cl
F322(a and b)	NH	-CF ₃	-H	-Br
F323(a and b)	NH	-CF ₃	-H	-F
F324(a and b)	NH	-CF ₃	-H	-CH ₃
F325(a and b)	NH	-CF ₃	-H	-CF ₃
F326(a and b)	NH	-CF ₃	-H	-OCH ₃
F327(a and b)	NH	-CF ₃	-H	-OCH ₂ CH ₃
F328(a and b)	NH	-CF ₃	-H	-OCF ₃
F329(a and b)	NH	-CF ₃	-H	- <i>tert</i> -butyl
F330(a and b)	NH	-CF ₃	-H	- <i>iso</i> -propyl
F331(a and b)	NH	-CHF ₂	-Cl	-H
F332(a and b)	NH	-CHF ₂	-Br	-H
F333(a and b)	NH	-CHF ₂	-F	-H
F334(a and b)	NH	-CHF ₂	-CH ₃	-H
F335(a and b)	NH	-CHF ₂	-CF ₃	-H
F336(a and b)	NH	-CHF ₂	-OCH ₃	-H
F337(a and b)	NH	-CHF ₂	-OCH ₂ CH ₃	-H
F338(a and b)	NH	-CHF ₂	-OCF ₃	-H
F339(a and b)	NH	-CHF ₂	- <i>tert</i> -butyl	-H
F340(a and b)	NH	-CHF ₂	- <i>iso</i> -propyl	-H
F341(a and b)	NH	-CHF ₂	-CH ₃	-CH ₃
F342(a and b)	NH	-CHF ₂	-H	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F343(a and b)	NH	-CHF ₂	-H	-Cl
F344(a and b)	NH	-CHF ₂	-H	-Br
F345(a and b)	NH	-CHF ₂	-H	-F
F346(a and b)	NH	-CHF ₂	-H	-CH ₃
F347(a and b)	NH	-CHF ₂	-H	-CF ₃
F348(a and b)	NH	-CHF ₂	-H	-OCH ₃
F349(a and b)	NH	-CHF ₂	-H	-OCH ₂ CH ₃
F350(a and b)	NH	-CHF ₂	-H	-OCF ₃
F351(a and b)	NH	-CHF ₂	-H	- <i>tert</i> -butyl
F352(a and b)	NH	-CHF ₂	-H	- <i>iso</i> -propyl
F353(a and b)	NH	-Br	-Br	-H
F354(a and b)	NH	-Br	-Cl	-H
F355(a and b)	NH	-Br	-F	-H
F356(a and b)	NH	-Br	-CH ₃	-H
F357(a and b)	NH	-Br	-CF ₃	-H
F358(a and b)	NH	-Br	-OCH ₃	-H
F359(a and b)	NH	-Br	-OCH ₂ CH ₃	-H
F360(a and b)	NH	-Br	-OCF ₃	-H
F361(a and b)	NH	-Br	- <i>tert</i> -butyl	-H
F362(a and b)	NH	-Br	- <i>iso</i> -propyl	-H
F363(a and b)	NH	-Br	-CH ₃	-CH ₃
F364(a and b)	NH	-Br	-H	-H
F365(a and b)	NH	-Br	-H	-Cl
F366(a and b)	NH	-Br	-H	-Br
F367(a and b)	NH	-Br	-H	-F
F368(a and b)	NH	-Br	-H	-CH ₃
F369(a and b)	NH	-Br	-H	-CF ₃
F370(a and b)	NH	-Br	-H	-OCH ₃
F371(a and b)	NH	-Br	-H	-OCH ₂ CH ₃
F372(a and b)	NH	-Br	-H	-OCF ₃
F373(a and b)	NH	-Br	-H	- <i>tert</i> -butyl
F374(a and b)	NH	-Br	-H	- <i>iso</i> -propyl
F375(a and b)	NH	-I	-Cl	-H
F376(a and b)	NH	-I	-Br	-H
F377(a and b)	NH	-I	-F	-H
F378(a and b)	NH	-I	-CH ₃	-H
F379(a and b)	NH	-I	-CF ₃	-H
F380(a and b)	NH	-I	-OCH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
F381(a and b)	NH	-I	-OCH ₂ CH ₃	-H
F382(a and b)	NH	-I	-OCF ₃	-H
F383(a and b)	NH	-I	- <i>tert</i> -butyl	-H
F384(a and b)	NH	-I	- <i>iso</i> -propyl	-H
F385(a and b)	NH	-I	-CH ₃	-CH ₃
F386(a and b)	NH	-I	-H	-H
F387(a and b)	NH	-I	-H	-Cl
F388(a and b)	NH	-I	-H	-Br
F389(a and b)	NH	-I	-H	-F
F390(a and b)	NH	-I	-H	-CH ₃
F391(a and b)	NH	-I	-H	-CF ₃
F392(a and b)	NH	-I	-H	-OCH ₃
F393(a and b)	NH	-I	-H	-OCH ₂ CH ₃
F394(a and b)	NH	-I	-H	-OCF ₃
F395(a and b)	NH	-I	-H	- <i>tert</i> -butyl
F396(a and b)	NH	-I	-H	- <i>iso</i> -propyl

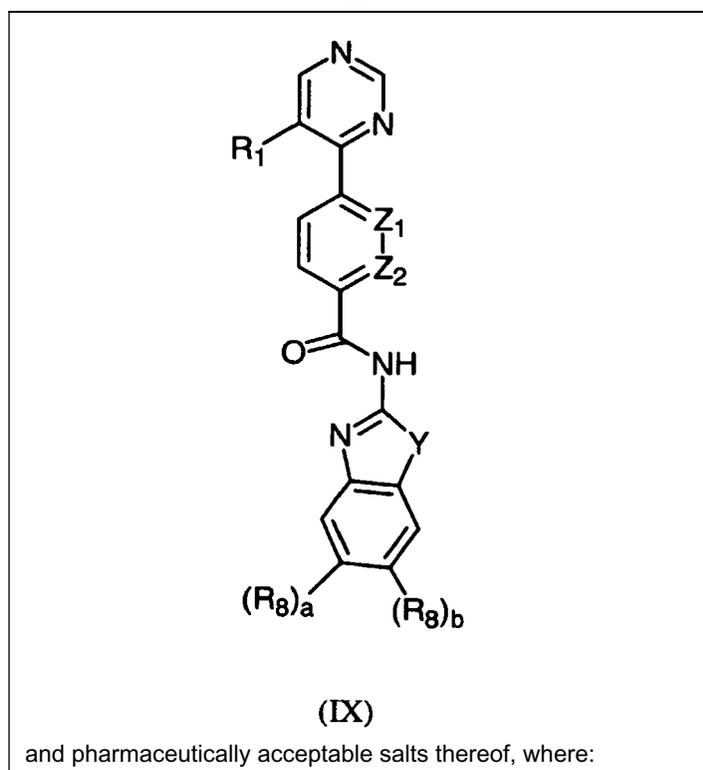
[0324] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

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Table 7



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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G1(a and b)	S	-Cl	-Cl	-H
G2(a and b)	S	-Cl	-Br	-H
G3(a and b)	S	-Cl	-F	-H
G4(a and b)	S	-Cl	-CH ₃	-H
G5(a and b)	S	-Cl	-CF ₃	-H
G6(a and b)	S	-Cl	-OCH ₃	-H
G7(a and b)	S	-Cl	-OCH ₂ CH ₃	-H
G8(a and b)	S	-Cl	-OCF ₃	-H
G9(a and b)	S	-Cl	- <i>tert</i> -butyl	-H
G10(a and b)	S	-Cl	- <i>iso</i> -propyl	-H
G11(a and b)	S	-Cl	-CH ₃	-CH ₃
G12(a and b)	S	-Cl	-H	-H
G13(a and b)	S	-Cl	-H	-Cl
G14(a and b)	S	-Cl	-H	-Br
G15(a and b)	S	-Cl	-H	-F
G16(a and b)	S	-Cl	-H	-CH ₃
G17(a and b)	S	-Cl	-H	-CF ₃
G18(a and b)	S	-Cl	-H	-OCH ₃
G19(a and b)	S	-Cl	-H	-OCH ₂ CH ₃
G20(a and b)	S	-Cl	-H	-OCF ₃
G21(a and b)	S	-Cl	-H	- <i>tert</i> -butyl
G22(a and b)	S	-Cl	-H	- <i>iso</i> -propyl
G23(a and b)	S	-CH ₃	-Cl	-H
G24(a and b)	S	-CH ₃	-Br	-H
G25(a and b)	S	-CH ₃	-F	-H
G26(a and b)	S	-CH ₃	-CH ₃	-H
G27(a and b)	S	-CH ₃	-CF ₃	-H
G28(a and b)	S	-CH ₃	-OCH ₃	-H
G29(a and b)	S	-CH ₃	-OCH ₂ CH ₃	-H
G30(a and b)	S	-CH ₃	-OCF ₃	-H
G31(a and b)	S	-CH ₃	- <i>tert</i> -butyl	-H
G32(a and b)	S	-CH ₃	- <i>iso</i> -propyl	-H
G33(a and b)	S	-CH ₃	-CH ₃	-CH ₃
G34(a and b)	S	-CH ₃	-H	-H
G35(a and b)	S	-CH ₃	-H	-Cl
G36(a and b)	S	-CH ₃	-H	-Br
G37(a and b)	S	-CH ₃	-H	-F
G38(a and b)	S	-CH ₃	-H	-CH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G39(a and b)	S	-CH ₃	-H	-CF ₃
G40(a and b)	S	-CH ₃	-H	-OCH ₃
G41(a and b)	S	-CH ₃	-H	-OCH ₂ CH ₃
G42(a and b)	S	-CH ₃	-H	-OCF ₃
G43(a and b)	S	-CH ₃	-H	- <i>tert</i> -butyl
G44(a and b)	S	-CH ₃	-H	- <i>iso</i> -propyl
G45(a and b)	S	-CF ₃	-Cl	-H
G46(a and b)	S	-CF ₃	-Br	-H
G47(a and b)	S	-CF ₃	-F	-H
G48(a and b)	S	-CF ₃	-CH ₃	-H
G49(a and b)	S	-CF ₃	-CF ₃	-H
G50(a and b)	S	-CF ₃	-OCH ₃	-H
G51(a and b)	S	-CF ₃	-OCH ₂ CH ₃	-H
G52(a and b)	S	-CF ₃	-OCF ₃	-H
G53(a and b)	S	-CF ₃	- <i>tert</i> -butyl	-H
G54(a and b)	S	-CF ₃	- <i>iso</i> -propyl	-H
G55(a and b)	S	-CF ₃	-CH ₃	-CH ₃
G56(a and b)	S	-CF ₃	-H	-H
G57(a and b)	S	-CF ₃	-H	-Cl
G58(a and b)	S	-CF ₃	-H	-Br
G59(a and b)	S	-CF ₃	-H	-F
G60(a and b)	S	-CF ₃	-H	-CH ₃
G61(a and b)	S	-CF ₃	-H	-CF ₃
G62(a and b)	S	-CF ₃	-H	-OCH ₃
G63(a and b)	S	-CF ₃	-H	-OCH ₂ CH ₃
G64(a and b)	S	-CF ₃	-H	-OCF ₃
G65(a and b)	S	-CF ₃	-H	- <i>tert</i> -butyl
G66(a and b)	S	-CF ₃	-H	- <i>iso</i> -propyl
G67(a and b)	S	-CHF ₂	-Cl	-H
G68(a and b)	S	-CHF ₂	-Br	-H
G69(a and b)	S	-CHF ₂	-F	-H
G70(a and b)	S	-CHF ₂	-CH ₃	-H
G71(a and b)	S	-CHF ₂	-CF ₃	-H
G72(a and b)	S	-CHF ₂	-OCH ₃	-H
G73(a and b)	S	-CHF ₂	-OCH ₂ CH ₃	-H
G74(a and b)	S	-CHF ₂	-OCF ₃	-H
G75(a and b)	S	-CHF ₂	- <i>tert</i> -butyl	-H
G76(a and b)	S	-CHF ₂	- <i>iso</i> -propyl	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G77(a and b)	S	-CHF ₂	-CH ₃	-CH ₃
G78(a and b)	S	-CHF ₂	-H	-H
G79(a and b)	S	-CHF ₂	-H	-Cl
G80(a and b)	S	-CHF ₂	-H	-Br
G81(a and b)	S	-CHF ₂	-H	-F
G82(a and b)	S	-CHF ₂	-H	-CH ₃
G83(a and b)	S	-CHF ₂	-H	-CF ₃
G84(a and b)	S	-CHF ₂	-H	-OCH ₃
G85(a and b)	S	-CHF ₂	-H	-OCH ₂ CH ₃
G86(a and b)	S	-CHF ₂	-H	-OCF ₃
G87(a and b)	S	-CHF ₂	-H	- <i>tert</i> -butyl
G88(a and b)	S	-CHF ₂	-H	- <i>iso</i> -propyl
G89(a and b)	S	-Br	-Br	-H
G90(a and b)	S	-Br	-Cl	-H
G91(a and b)	S	-Br	-F	-H
G92(a and b)	S	-Br	-CH ₃	-H
G93(a and b)	S	-Br	-CF ₃	-H
G94(a and b)	S	-Br	-OCH ₃	-H
G95(a and b)	S	-Br	-OCH ₂ CH ₃	-H
G96(a and b)	S	-Br	-OCF ₃	-H
G97(a and b)	S	-Br	- <i>tert</i> -butyl	-H
G98(a and b)	S	-Br	- <i>iso</i> -propyl	-H
G99(a and b)	S	-Br	-CH ₃	-CH ₃
G100(a and b)	S	-Br	-H	-H
G101(a and b)	S	-Br	-H	-Cl
G102(a and b)	S	-Br	-H	-Br
G103(a and b)	S	-Br	-H	-F
G104(a and b)	S	-Br	-H	-CH ₃
G105(a and b)	S	-Br	-H	-CF ₃
G106(a and b)	S	-Br	-H	-OCH ₃
G107(a and b)	S	-Br	-H	-OCH ₂ CH ₃
G108(a and b)	S	-Br	-H	-OCF ₃
G109(a and b)	S	-Br	-H	- <i>tert</i> -butyl
G110(a and b)	S	-Br	-H	- <i>iso</i> -propyl
G111(a and b)	S	-I	-Cl	-H
G112(a and b)	S	-I	-Br	-H
G113(a and b)	S	-I	-F	-H
G114(a and b)	S	-I	-CH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G115(a and b)	S	-I	-CF ₃	-H
G116(a and b)	S	-I	-OCH ₃	-H
G117(a and b)	S	-I	-OCH ₂ CH ₃	-H
G118(a and b)	S	-I	-OCF ₃	-H
G119(a and b)	S	-I	- <i>tert</i> -butyl	-H
G120(a and b)	S	-I	- <i>iso</i> -propyl	-H
G121(a and b)	S	-I	-CH ₃	-CH ₃
G122(a and b)	S	-I	-H	-H
G123(a and b)	S	-I	-H	-Cl
G124(a and b)	S	-I	-H	-Br
G125(a and b)	S	-I	-H	-F
G126(a and b)	S	-I	-H	-CH ₃
G127(a and b)	S	-I	-H	-CF ₃
G128(a and b)	S	-I	-H	-OCH ₃
G129(a and b)	S	-I	-H	-OCH ₂ CH ₃
G130(a and b)	S	-I	-H	-OCF ₃
G131(a and b)	S	-I	-H	- <i>tert</i> -butyl
G132(a and b)	S	-I	-H	- <i>iso</i> -propyl
G133(a and b)	O	-Cl	-Cl	-H
G134(a and b)	O	-Cl	-Br	-H
G135(a and b)	O	-Cl	-F	-H
G136(a and b)	O	-Cl	-CH ₃	-H
G137(a and b)	O	-Cl	-CF ₃	-H
G138(a and b)	O	-Cl	-OCH ₃	-H
G139(a and b)	O	-Cl	-OCH ₂ CH ₃	-H
G140(a and b)	O	-Cl	-OCF ₃	-H
G141(a and b)	O	-Cl	- <i>tert</i> -butyl	-H
G 142(a and b)	O	-Cl	- <i>iso</i> -propyl	-H
G143(a and b)	O	-Cl	-CH ₃	-CH ₃
G144(a and b)	O	-Cl	-H	-H
G145(a and b)	O	-Cl	-H	-CH ₃
G146(a and b)	O	-Cl	-H	-Cl
G147(a and b)	O	-Cl	-H	-Br
G148(a and b)	O	-Cl	-H	-F
G149(a and b)	O	-Cl	-H	-CF ₃
G150(a and b)	O	-Cl	-H	-OCH ₃
G151(a and b)	O	-Cl	-H	-OCH ₂ CH ₃
G152(a and b)	O	-Cl	-H	-OCF ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G153(a and b)	O	-Cl	-H	- <i>tert</i> -butyl
G154(a and b)	O	-Cl	-H	- <i>iso</i> -propyl
G155(a and b)	O	-CH ₃	-Cl	-H
G156(a and b)	O	-CH ₃	-Br	-H
G157(a and b)	O	-CH ₃	-F	-H
G158(a and b)	O	-CH ₃	-CH ₃	-H
G159(a and b)	O	-CH ₃	-CF ₃	-H
G160(a and b)	O	-CH ₃	-OCH ₃	-H
G161(a and b)	O	-CH ₃	-OCH ₂ CH ₃	-H
G162(a and b)	O	-CH ₃	-OCF ₃	-H
G163(a and b)	O	-CH ₃	- <i>tert</i> -butyl	-H
G164(a and b)	O	-CH ₃	- <i>iso</i> -propyl	-H
G165(a and b)	O	-CH ₃	-CH ₃	-CH ₃
G166(a and b)	O	-CH ₃	-H	-H
G167(a and b)	O	-CH ₃	-H	-Cl
G168(a and b)	O	-CH ₃	-H	-Br
G169(a and b)	O	-CH ₃	-H	-F
G170(a and b)	O	-CH ₃	-H	-CH ₃
G171(a and b)	O	-CH ₃	-H	-CF ₃
G172(a and b)	O	-CH ₃	-H	-OCH ₃
G173(a and b)	O	-CH ₃	-H	-OCH ₂ CH ₃
G174(a and b)	O	-CH ₃	-H	-OCF ₃
G175(a and b)	O	-CH ₃	-H	- <i>tert</i> -butyl
G176(a and b)	O	-CH ₃	-H	- <i>iso</i> -propyl
G177(a and b)	O	-CF ₃	-Cl	-H
G178(a and b)	O	-CF ₃	-Br	-H
G179(a and b)	O	-CF ₃	-F	-H
G180(a and b)	O	-CF ₃	-CH ₃	-H
G181(a and b)	O	-CF ₃	-CF ₃	-H
G182(a and b)	O	-CF ₃	-OCH ₃	-H
G183(a and b)	O	-CF ₃	-OCH ₂ CH ₃	-H
G184(a and b)	O	-CF ₃	-OCF ₃	-H
G185(a and b)	O	-CF ₃	- <i>tert</i> -butyl	-H
G186(a and b)	O	-CF ₃	- <i>iso</i> -propyl	-H
G187(a and b)	O	-CF ₃	-CH ₃	-CH ₃
G188(a and b)	O	-CF ₃	-H	-H
G189(a and b)	O	-CF ₃	-H	-Cl
G190(a and b)	O	-CF ₃	-H	-Br

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G191(a and b)	O	-CF ₃	-H	-F
G192(a and b)	O	-CF ₃	-H	-CH ₃
G193(a and b)	O	-CF ₃	-H	-CF ₃
G194(a and b)	O	-CF ₃	-H	-OCH ₃
G195(a and b)	O	-CF ₃	-H	-OCH ₂ CH ₃
G196(a and b)	O	-CF ₃	-H	-OCF ₃
G197(a and b)	O	-CF ₃	-H	- <i>tert</i> -butyl
G198(a and b)	O	-CF ₃	-H	- <i>iso</i> -propyl
G199(a and b)	O	-CHF ₂	-Cl	-H
G200(a and b)	O	-CHF ₂	-Br	-H
G201(a and b)	O	-CHF ₂	-F	-H
G202(a and b)	O	-CHF ₂	-CH ₃	-H
G203(a and b)	O	-CHF ₂	-CF ₃	-H
G204(a and b)	O	-CHF ₂	-OCH ₃	-H
G205(a and b)	O	-CHF ₂	-OCH ₂ CH ₃	-H
G206(a and b)	O	-CHF ₂	-OCF ₃	-H
G207(a and b)	O	-CHF ₂	- <i>tert</i> -butyl	-H
G208(a and b)	O	-CHF ₂	- <i>iso</i> -propyl	-H
G209(a and b)	O	-CHF ₂	-CH ₃	-CH ₃
G210(a and b)	O	-CHF ₂	-H	-H
G211(a and b)	O	-CHF ₂	-H	-Cl
G212(a and b)	O	-CHF ₂	-H	-Br
G213(a and b)	O	-CHF ₂	-H	-F
G214(a and b)	O	-CHF ₂	-H	-CH ₃
G215(a and b)	O	-CHF ₂	-H	-CF ₃
G216(a and b)	O	-CHF ₂	-H	-OCH ₃
G217(a and b)	O	-CHF ₂	-H	-OCH ₂ CH ₃
G218(a and b)	O	-CHF ₂	-H	-OCF ₃
G219(a and b)	O	-CHF ₂	-H	- <i>tert</i> -butyl
G220(a and b)	O	-CHF ₂	-H	- <i>iso</i> -propyl
G221(a and b)	O	-Br	-Br	-H
G222(a and b)	O	-Br	-Cl	-H
G223(a and b)	O	-Br	-F	-H
G224(a and b)	O	-Br	-CH ₃	-H
G225(a and b)	O	-Br	-CF ₃	-H
G226(a and b)	O	-Br	-OCH ₃	-H
G227(a and b)	O	-Br	-OCH ₂ CH ₃	-H
G228(a and b)	O	-Br	-OCF ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G229(a and b)	O	-Br	- <i>tert</i> -butyl	-H
G230(a and b)	O	-Br	- <i>iso</i> -propyl	-H
G231(a and b)	O	-Br	-CH ₃	-CH ₃
G232(a and b)	O	-Br	-H	-H
G233(a and b)	O	-Br	-H	-Cl
G234(a and b)	O	-Br	-H	-Br
G235(a and b)	O	-Br	-H	-F
G236(a and b)	O	-Br	-H	-CH ₃
G237(a and b)	O	-Br	-H	-CF ₃
G238(a and b)	O	-Br	-H	-OCH ₃
G239(a and b)	O	-Br	-H	-OCH ₂ CH ₃
G240(a and b)	O	-Br	-H	-OCF ₃
G241(a and b)	O	-Br	-H	- <i>tert</i> -butyl
G242(a and b)	O	-Br	-H	- <i>iso</i> -propyl
G243(a and b)	O	-I	-Cl	-H
G244(a and b)	O	-I	-Br	-H
G245(a and b)	O	-I	-F	-H
G246(a and b)	O	-I	-CH ₃	-H
G247(a and b)	O	-I	-CF ₃	-H
G248(a and b)	O	-I	-OCH ₃	-H
G249(a and b)	O	-I	-OCH ₂ CH ₃	-H
G250(a and b)	O	-I	-OCF ₃	-H
G251(a and b)	O	-I	- <i>tert</i> -butyl	-H
G252(a and b)	O	-I	- <i>iso</i> -propyl	-H
G253(a and b)	O	-I	-CH ₃	-CH ₃
G254(a and b)	O	-I	-H	-H
G255(a and b)	O	-I	-H	-Cl
G256(a and b)	O	-I	-H	-Br
G257(a and b)	O	-I	-H	-F
G258(a and b)	O	-I	-H	-CH ₃
G259(a and b)	O	-I	-H	-CF ₃
G260(a and b)	O	-I	-H	-OCH ₃
G261(a and b)	O	-I	-H	-OCH ₂ CH ₃
G262(a and b)	O	-I	-H	-OCF ₃
G263(a and b)	O	-I	-H	- <i>tert</i> -butyl
G264(a and b)	O	-I	-H	- <i>iso</i> -propyl
G265(a and b)	NH	-Cl	-Cl	-H
G266(a and b)	NH	-Cl	-Br	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G267(a and b)	NH	-Cl	-F	-H
G268(a and b)	NH	-Cl	-CH ₃	-H
G269(a and b)	NH	-Cl	-CF ₃	-H
G270(a and b)	NH	-Cl	-OCH ₃	-H
G271(a and b)	NH	-Cl	-OCH ₂ CH ₃	-H
G272(a and b)	NH	-Cl	-OCF ₃	-H
G273(a and b)	NH	-Cl	- <i>tert</i> -butyl	-H
G274(a and b)	NH	-Cl	- <i>iso</i> -propyl	-H
G275(a and b)	NH	-Cl	-CH ₃	-CH ₃
G276(a and b)	NH	-Cl	-H	-H
G277(a and b)	NH	-Cl	-H	-CH ₃
G278(a and b)	NH	-Cl	-H	-Cl
G279(a and b)	NH	-Cl	-H	-Br
G280(a and b)	NH	-Cl	-H	-F
G281(a and b)	NH	-Cl	-H	-CF ₃
G282(a and b)	NH	-Cl	-H	-OCH ₃
G283(a and b)	NH	-Cl	-H	-OCH ₂ CH ₃
G284(a and b)	NH	-Cl	-H	-OCF ₃
G285(a and b)	NH	-Cl	-H	- <i>tert</i> -butyl
G286(a and b)	NH	-Cl	-H	- <i>iso</i> -propyl
G287(a and b)	NH	-CH ₃	-Cl	-H
G288(a and b)	NH	-CH ₃	-Br	-H
G289(a and b)	NH	-CH ₃	-F	-H
G290(a and b)	NH	-CH ₃	-CH ₃	-H
G291(a and b)	NH	-CH ₃	-CF ₃	-H
G292(a and b)	NH	-CH ₃	-OCH ₃	-H
G293(a and b)	NH	-CH ₃	-OCH ₂ CH ₃	-H
G294(a and b)	NH	-CH ₃	-OCF ₃	-H
G295(a and b)	NH	-CH ₃	- <i>tert</i> -butyl	-H
G296(a and b)	NH	-CH ₃	- <i>iso</i> -propyl	-H
G297(a and b)	NH	-CH ₃	-CH ₃	-CH ₃
G298(a and b)	NH	-CH ₃	-H	-H
G299(a and b)	NH	-CH ₃	-H	-Cl
G300(a and b)	NH	-CH ₃	-H	-Br
G301(a and b)	NH	-CH ₃	-H	-F
G302(a and b)	NH	-CH ₃	-H	-CH ₃
G303(a and b)	NH	-CH ₃	-H	-CF ₃
G304(a and b)	NH	-CH ₃	-H	-OCH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G305(a and b)	NH	-CH ₃	-H	-OCH ₂ CH ₃
G306(a and b)	NH	-CH ₃	-H	-OCF ₃
G307(a and b)	NH	-CH ₃	-H	- <i>tert</i> -butyl
G308(a and b)	NH	-CH ₃	-H	- <i>iso</i> -propyl
G309(a and b)	NH	-CF ₃	-Cl	-H
G310(a and b)	NH	-CF ₃	-Br	-H
G311(a and b)	NH	-CF ₃	-F	-H
G312(a and b)	NH	-CF ₃	-CH ₃	-H
G313(a and b)	NH	-CF ₃	-CF ₃	-H
G314(a and b)	NH	-CF ₃	-OCH ₃	-H
G315(a and b)	NH	-CF ₃	-OCH ₂ CH ₃	-H
G316(a and b)	NH	-CF ₃	-OCF ₃	-H
G317(a and b)	NH	-CF ₃	- <i>tert</i> -butyl	-H
G318(a and b)	NH	-CF ₃	- <i>iso</i> -propyl	-H
G319(a and b)	NH	-CF ₃	-CH ₃	-CH ₃
G320(a and b)	NH	-CF ₃	-H	-H
G321(a and b)	NH	-CF ₃	-H	-Cl
G322(a and b)	NH	-CF ₃	-H	-Br
G323(a and b)	NH	-CF ₃	-H	-F
G324(a and b)	NH	-CF ₃	-H	-CH ₃
G325(a and b)	NH	-CF ₃	-H	-CF ₃
G326(a and b)	NH	-CF ₃	-H	-OCH ₃
G327(a and b)	NH	-CF ₃	-H	-OCH ₂ CH ₃
G328(a and b)	NH	-CF ₃	-H	-OCF ₃
G329(a and b)	NH	-CF ₃	-H	- <i>tert</i> -butyl
G330(a and b)	NH	-CF ₃	-H	- <i>iso</i> -propyl
G331(a and b)	NH	-CHF ₂	-Cl	-H
G332(a and b)	NH	-CHF ₂	-Br	-H
G333(a and b)	NH	-CHF ₂	-F	-H
G334(a and b)	NH	-CHF ₂	-CH ₃	-H
G335(a and b)	NH	-CHF ₂	-CF ₃	-H
G336(a and b)	NH	-CHF ₂	-OCH ₃	-H
G337(a and b)	NH	-CHF ₂	-OCH ₂ CH ₃	-H
G338(a and b)	NH	-CHF ₂	-OCF ₃	-H
G339(a and b)	NH	-CHF ₂	- <i>tert</i> -butyl	-H
G340(a and b)	NH	-CHF ₂	- <i>iso</i> -propyl	-H
G341(a and b)	NH	-CHF ₂	-CH ₃	-CH ₃
G342(a and b)	NH	-CHF ₂	-H	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G343(a and b)	NH	-CHF ₂	-H	-Cl
G344(a and b)	NH	-CHF ₂	-H	-Br
G345(a and b)	NH	-CHF ₂	-H	-F
G346(a and b)	NH	-CHF ₂	-H	-CH ₃
G347(a and b)	NH	-CHF ₂	-H	-CF ₃
G348(a and b)	NH	-CHF ₂	-H	-OCH ₃
G349(a and b)	NH	-CHF ₂	-H	-OCH ₂ CH ₃
G350(a and b)	NH	-CHF ₂	-H	-OCF ₃
G351(a and b)	NH	-CHF ₂	-H	- <i>tert</i> -butyl
G352(a and b)	NH	-CHF ₂	-H	- <i>iso</i> -propyl
G353(a and b)	NH	-Br	-Br	-H
G354(a and b)	NH	-Br	-Cl	-H
G355(a and b)	NH	-Br	-F	-H
G356(a and b)	NH	-Br	-CH ₃	-H
G357(a and b)	NH	-Br	-CF ₃	-H
G358(a and b)	NH	-Br	-OCH ₃	-H
G359(a and b)	NH	-Br	-OCH ₂ CH ₃	-H
G360(a and b)	NH	-Br	-OCF ₃	-H
G361(a and b)	NH	-Br	- <i>tert</i> -butyl	-H
G362(a and b)	NH	-Br	- <i>iso</i> -propyl	-H
G363(a and b)	NH	-Br	-CH ₃	-CH ₃
G364(a and b)	NH	-Br	-H	-H
G365(a and b)	NH	-Br	-H	-Cl
G366(a and b)	NH	-Br	-H	-Br
G367(a and b)	NH	-Br	-H	-F
G368(a and b)	NH	-Br	-H	-CH ₃
G369(a and b)	NH	-Br	-H	-CF ₃
G370(a and b)	NH	-Br	-H	-OCH ₃
G371(a and b)	NH	-Br	-H	-OCH ₂ CH ₃
G372(a and b)	NH	-Br	-H	-OCF ₃
G373(a and b)	NH	-Br	-H	- <i>tert</i> -butyl
G374(a and b)	NH	-Br	-H	- <i>iso</i> -propyl
G375(a and b)	NH	-I	-Cl	-H
G376(a and b)	NH	-I	-Br	-H
G377(a and b)	NH	-I	-F	-H
G378(a and b)	NH	-I	-CH ₃	-H
G379(a and b)	NH	-I	-CF ₃	-H
G380(a and b)	NH	-I	-OCH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
G381(a and b)	NH	-I	-OCH ₂ CH ₃	-H
G382(a and b)	NH	-I	-OCF ₃	-H
G383(a and b)	NH	-I	- <i>tert</i> -butyl	-H
G384(a and b)	NH	-I	- <i>iso</i> -propyl	-H
G385(a and b)	NH	-I	-CH ₃	-CH ₃
G386(a and b)	NH	-I	-H	-H
G387(a and b)	NH	-I	-H	-Cl
G388(a and b)	NH	-I	-H	-Br
G389(a and b)	NH	-I	-H	-F
G390(a and b)	NH	-I	-H	-CH ₃
G391(a and b)	NH	-I	-H	-CF ₃
G392(a and b)	NH	-I	-H	-OCH ₃
G393(a and b)	NH	-I	-H	-OCH ₂ CH ₃
G394(a and b)	NH	-I	-H	-OCF ₃
G395(a and b)	NH	-I	-H	- <i>tert</i> -butyl
G396(a and b)	NH	-I	-H	- <i>iso</i> -propyl

[0325] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

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Table 8

(X)				
and pharmaceutically acceptable salts thereof, where:				
Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H1 (a) and (b)	S	-Cl	-Cl	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H2 (a) and (b)	S	-Cl	-Br	-H
H3 (a) and (b)	S	-Cl	-F	-H
H4 (a) and (b)	S	-Cl	-CH ₃	-H
H5 (a) and (b)	S	-Cl	-CF ₃	-H
H6 (a) and (b)	S	-Cl	-OCH ₃	-H
H7 (a) and (b)	S	-Cl	-OCH ₂ CH ₃	-H
H8 (a) and (b)	S	-Cl	-OCF ₃	-H
H9 (a) and (b)	S	-Cl	- <i>tert</i> -butyl	-H
H10 (a) and (b)	S	-Cl	- <i>iso</i> -propyl	-H
H11 (a) and (b)	S	-Cl	-CH ₃	-CH ₃
H12 (a) and (b)	S	-Cl	-H	-H
H13 (a) and (b)	S	-Cl	-H	-Cl
H14 (a) and (b)	S	-Cl	-H	-Br
H15 (a) and (b)	S	-Cl	-H	-F
H16 (a) and (b)	S	-Cl	-H	-CH ₃
H17 (a) and (b)	S	-Cl	-H	-CF ₃
H18 (a) and (b)	S	-Cl	-H	-OCH ₃
H19 (a) and (b)	S	-Cl	-H	-OCH ₂ CH ₃
H20 (a) and (b)	S	-Cl	-H	-OCF ₃
H21 (a) and (b)	S	-Cl	-H	- <i>tert</i> -butyl
H22 (a) and (b)	S	-Cl	-H	- <i>iso</i> -propyl
H23 (a) and (b)	S	-CH ₃	-Cl	-H
H24 (a) and (b)	S	-CH ₃	-Br	-H
H25 (a) and (b)	S	-CH ₃	-F	-H
H26 (a) and (b)	S	-CH ₃	-CH ₃	-H
H27 (a) and (b)	S	-CH ₃	-CF ₃	-H
H28 (a) and (b)	S	-CH ₃	-OCH ₃	-H
H29 (a) and (b)	S	-CH ₃	-OCH ₂ CH ₃	-H
H30 (a) and (b)	S	-CH ₃	-OCF ₃	-H
H31 (a) and (b)	S	-CH ₃	- <i>tert</i> -butyl	-H
H32 (a) and (b)	S	-CH ₃	- <i>iso</i> -propyl	-H
H33 (a) and (b)	S	-CH ₃	-CH ₃	-CH ₃
H34 (a) and (b)	S	-CH ₃	-H	-H
H35 (a) and (b)	S	-CH ₃	-H	-Cl
H36 (a) and (b)	S	-CH ₃	-H	-Br
H37 (a) and (b)	S	-CH ₃	-H	-F
H38 (a) and (b)	S	-CH ₃	-H	-CH ₃
H39 (a) and (b)	S	-CH ₃	-H	-CF ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H40 (a) and (b)	S	-CH ₃	-H	-OCH ₃
H41 (a) and (b)	S	-CH ₃	-H	-OCH ₂ CH ₃
H42 (a) and (b)	S	-CH ₃	-H	-OCF ₃
H43 (a) and (b)	S	-CH ₃	-H	- <i>tert</i> -butyl
H44 (a) and (b)	S	-CH ₃	-H	- <i>iso</i> -propyl
H45 (a) and (b)	S	-CF ₃	-Cl	-H
H46 (a) and (b)	S	-CF ₃	-Br	-H
H47 (a) and (b)	S	-CF ₃	-F	-H
H48 (a) and (b)	S	-CF ₃	-CH ₃	-H
H49 (a) and (b)	S	-CF ₃	-CF ₃	-H
H50 (a) and (b)	S	-CF ₃	-OCH ₃	-H
H51 (a) and (b)	S	-CF ₃	-OCH ₂ CH ₃	-H
H52 (a) and (b)	S	-CF ₃	-OCF ₃	-H
H53 (a) and (b)	S	-CF ₃	- <i>tert</i> -butyl	-H
H54 (a) and (b)	S	-CF ₃	- <i>iso</i> -propyl	-H
H55 (a) and (b)	S	-CF ₃	-CH ₃	-CH ₃
H56 (a) and (b)	S	-CF ₃	-H	-H
H57 (a) and (b)	S	-CF ₃	-H	-Cl
H58 (a) and (b)	S	-CF ₃	-H	-Br
H59 (a) and (b)	S	-CF ₃	-H	-F
H60 (a) and (b)	S	-CF ₃	-H	-CH ₃
H61 (a) and (b)	S	-CF ₃	-H	-CF ₃
H62 (a) and (b)	S	-CF ₃	-H	-OCH ₃
H63 (a) and (b)	S	-CF ₃	-H	-OCH ₂ CH ₃
H64 (a) and (b)	S	-CF ₃	-H	-OCF ₃
H65 (a) and (b)	S	-CF ₃	-H	- <i>tert</i> -butyl
H66 (a) and (b)	S	-CF ₃	-H	- <i>iso</i> -propyl
H67 (a) and (b)	S	-CHF ₂	-Cl	-H
H68 (a) and (b)	S	-CHF ₂	-Br	-H
H69 (a) and (b)	S	-CHF ₂	-F	-H
H70 (a) and (b)	S	-CHF ₂	-CH ₃	-H
H71 (a) and (b)	S	-CHF ₂	-CF ₃	-H
H72 (a) and (b)	S	-CHF ₂	-OCH ₃	-H
H73 (a) and (b)	S	-CHF ₂	-OCH ₂ CH ₃	-H
H74 (a) and (b)	S	-CHF ₂	-OCF ₃	-H
H75 (a) and (b)	S	-CHF ₂	- <i>tert</i> -butyl	-H
H76 (a) and (b)	S	-CHF ₂	- <i>iso</i> -propyl	-H
H77 (a) and (b)	S	-CHF ₂	-CH ₃	-CH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H78 (a) and (b)	S	-CHF ₂	-H	-H
H79 (a) and (b)	S	-CHF ₂	-H	-Cl
H80 (a) and (b)	S	-CHF ₂	-H	-Br
H81 (a) and (b)	S	-CHF ₂	-H	-F
H82 (a) and (b)	S	-CHF ₂	-H	-CH ₃
H83 (a) and (b)	S	-CHF ₂	-H	-CF ₃
H84 (a) and (b)	S	-CHF ₂	-H	-OCH ₃
H85 (a) and (b)	S	-CHF ₂	-H	-OCH ₂ CH ₃
H86 (a) and (b)	S	-CHF ₂	-H	-OCF ₃
H87 (a) and (b)	S	-CHF ₂	-H	- <i>tert</i> -butyl
H88 (a) and (b)	S	-CHF ₂	-H	- <i>iso</i> -propyl
H89 (a) and (b)	S	-Br	-Br	-H
H90 (a) and (b)	S	-Br	-Cl	-H
H91 (a) and (b)	S	-Br	-F	-H
H92 (a) and (b)	S	-Br	-CH ₃	-H
H93 (a) and (b)	S	-Br	-CF ₃	-H
H94 (a) and (b)	S	-Br	-OCH ₃	-H
H95 (a) and (b)	S	-Br	-OCH ₂ CH ₃	-H
H96 (a) and (b)	S	-Br	-OCF ₃	-H
H97 (a) and (b)	S	-Br	- <i>tert</i> -butyl	-H
H98 (a) and (b)	S	-Br	- <i>iso</i> -propyl	-H
H99 (a) and (b)	S	-Br	-CH ₃	-CH ₃
H100 (a) and (b)	S	-Br	-H	-H
H101 (a) and (b)	S	-Br	-H	-Cl
H102 (a) and (b)	S	-Br	-H	-Br
H103 (a) and (b)	S	-Br	-H	-F
H104 (a) and (b)	S	-Br	-H	-CH ₃
H105 (a) and (b)	S	-Br	-H	-CF ₃
H106 (a) and (b)	S	-Br	-H	-OCH ₃
H107 (a) and (b)	S	-Br	-H	-OCH ₂ CH ₃
H108 (a) and (b)	S	-Br	-H	-OCF ₃
H109 (a) and (b)	S	-Br	-H	- <i>tert</i> -butyl
H110 (a) and (b)	S	-Br	-H	- <i>iso</i> -propyl
H111 (a) and (b)	S	-I	-Cl	-H
H112 (a) and (b)	S	-I	-Br	-H
H113 (a) and (b)	S	-I	-F	-H
H114 (a) and (b)	S	-I	-CH ₃	-H
H115 (a) and (b)	S	-I	-CF ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H116 (a) and (b)	S	-I	-OCH ₃	-H
H117 (a) and (b)	S	-I	-OCH ₂ CH ₃	-H
H118 (a) and (b)	S	-I	-OCF ₃	-H
H119 (a) and (b)	S	-I	- <i>tert</i> -butyl	-H
H120 (a) and (b)	S	-I	- <i>iso</i> -propyl	-H
H121 (a) and (b)	S	-I	-CH ₃	-CH ₃
H122 (a) and (b)	S	-I	-H	-H
H123 (a) and (b)	S	-I	-H	-Cl
H124 (a) and (b)	S	-I	-H	-Br
H125 (a) and (b)	S	-I	-H	-F
H126 (a) and (b)	S	-I	-H	-CH ₃
H127 (a) and (b)	S	-I	-H	-CF ₃
H128 (a) and (b)	S	-I	-H	-OCH ₃
H 129 (a) and (b)	S	-I	-H	-OCH ₂ CH ₃
H130 (a) and (b)	S	-I	-H	-OCF ₃
H131 (a) and (b)	S	-I	-H	- <i>tert</i> -butyl
H132 (a) and (b)	S	-I	-H	- <i>iso</i> -propyl
H133 (a) and (b)	O	-Cl	-Cl	-H
H134 (a) and (b)	O	-Cl	-Br	-H
H135 (a) and (b)	O	-Cl	-F	-H
H136 (a) and (b)	O	-Cl	-CH ₃	-H
H137 (a) and (b)	O	-Cl	-CF ₃	-H
H138 (a) and (b)	O	-Cl	-OCH ₃	-H
H139 (a) and (b)	O	-Cl	-OCH ₂ CH ₃	-H
H140 (a) and (b)	O	-Cl	-OCF ₃	-H
H141 (a) and (b)	O	-Cl	- <i>tert</i> -butyl	-H
H142 (a) and (b)	O	-Cl	- <i>iso</i> -propyl	-H
H143 (a) and (b)	O	-Cl	-CH ₃	-CH ₃
H144 (a) and (b)	O	-Cl	-H	-H
H145 (a) and (b)	O	-Cl	-H	-CH ₃
H146 (a) and (b)	O	-Cl	-H	-Cl
H147 (a) and (b)	O	-Cl	-H	-Br
H148 (a) and (b)	O	-Cl	-H	-F
H149 (a) and (b)	O	-Cl	-H	-CF ₃
H150 (a) and (b)	O	-Cl	-H	-OCH ₃
H151 (a) and (b)	O	-Cl	-H	-OCH ₂ CH ₃
H152 (a) and (b)	O	-Cl	-H	-OCF ₃
H153 (a) and (b)	O	-Cl	-H	- <i>tert</i> -butyl

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H154 (a) and (b)	O	-Cl	-H	- <i>iso</i> -propyl
H155 (a) and (b)	O	-CH ₃	-Cl	-H
H156 (a) and (b)	O	-CH ₃	-Br	-H
H157 (a) and (b)	O	-CH ₃	-F	-H
H158 (a) and (b)	O	-CH ₃	-CH ₃	-H
H159 (a) and (b)	O	-CH ₃	-CF ₃	-H
H160 (a) and (b)	O	-CH ₃	-OCH ₃	-H
H161 (a) and (b)	O	-CH ₃	-OCH ₂ CH ₃	-H
H162 (a) and (b)	O	-CH ₃	-OCF ₃	-H
H163 (a) and (b)	O	-CH ₃	- <i>tert</i> -butyl	-H
H164 (a) and (b)	O	-CH ₃	- <i>iso</i> -propyl	-H
H165 (a) and (b)	O	-CH ₃	-CH ₃	-CH ₃
H166 (a) and (b)	O	-CH ₃	-H	-H
H167 (a) and (b)	O	-CH ₃	-H	-Cl
H168 (a) and (b)	O	-CH ₃	-H	-Br
H169 (a) and (b)	O	-CH ₃	-H	-F
H170 (a) and (b)	O	-CH ₃	-H	-CH ₃
H171 (a) and (b)	O	-CH ₃	-H	-CF ₃
H172 (a) and (b)	O	-CH ₃	-H	-OCH ₃
H173 (a) and (b)	O	-CH ₃	-H	-OCH ₂ CH ₃
H174 (a) and (b)	O	-CH ₃	-H	-OCF ₃
H175 (a) and (b)	O	-CH ₃	-H	- <i>tert</i> -butyl
H176 (a) and (b)	O	-CH ₃	-H	- <i>iso</i> -propyl
H177 (a) and (b)	O	-CF ₃	-Cl	-H
H178 (a) and (b)	O	-CF ₃	-Br	-H
H179 (a) and (b)	O	-CF ₃	-F	-H
H180 (a) and (b)	O	-CF ₃	-CH ₃	-H
H181 (a) and (b)	O	-CF ₃	-CF ₃	-H
H182 (a) and (b)	O	-CF ₃	-OCH ₃	-H
H183 (a) and (b)	O	-CF ₃	-OCH ₂ CH ₃	-H
H184 (a) and (b)	O	-CF ₃	-OCF ₃	-H
H185 (a) and (b)	O	-CF ₃	- <i>tert</i> -butyl	-H
H186 (a) and (b)	O	-CF ₃	- <i>iso</i> -propyl	-H
H187 (a) and (b)	O	-CF ₃	-CH ₃	-CH ₃
H188 (a) and (b)	O	-CF ₃	-H	-H
H189 (a) and (b)	O	-CF ₃	-H	-Cl
H190 (a) and (b)	O	-CF ₃	-H	-Br
H191 (a) and (b)	O	-CF ₃	-H	-F

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H192 (a) and (b)	O	-CF ₃	-H	-CH ₃
H193 (a) and (b)	O	-CF ₃	-H	-CF ₃
H194 (a) and (b)	O	-CF ₃	-H	-OCH ₃
H195 (a) and (b)	O	-CF ₃	-H	-OCH ₂ CH ₃
H196 (a) and (b)	O	-CF ₃	-H	-OCF ₃
H197 (a) and (b)	O	-CF ₃	-H	- <i>tert</i> -butyl
H198 (a) and (b)	O	-CF ₃	-H	- <i>iso</i> -propyl
H199 (a) and (b)	O	-CHF ₂	-Cl	-H
H200 (a) and (b)	O	-CHF ₂	-Br	-H
H201 (a) and (b)	O	-CHF ₂	-F	-H
H202 (a) and (b)	O	-CHF ₂	-CH ₃	-H
H203 (a) and (b)	O	-CHF ₂	-CF ₃	-H
H204 (a) and (b)	O	-CHF ₂	-OCH ₃	-H
H205 (a) and (b)	O	-CHF ₂	-OCH ₂ CH ₃	-H
H206 (a) and (b)	O	-CHF ₂	-OCF ₃	-H
H207 (a) and (b)	O	-CHF ₂	- <i>tert</i> -butyl	-H
H208 (a) and (b)	O	-CHF ₂	- <i>iso</i> -propyl	-H
H209 (a) and (b)	O	-CHF ₂	-CH ₃	-CH ₃
H210 (a) and (b)	O	-CHF ₂	-H	-H
H211 (a) and (b)	O	-CHF ₂	-H	-Cl
H212 (a) and (b)	O	-CHF ₂	-H	-Br
H213 (a) and (b)	O	-CHF ₂	-H	-F
H214 (a) and (b)	O	-CHF ₂	-H	-CH ₃
H215 (a) and (b)	O	-CHF ₂	-H	-CF ₃
H216 (a) and (b)	O	-CHF ₂	-H	-OCH ₃
H217 (a) and (b)	O	-CHF ₂	-H	-OCH ₂ CH ₃
H218 (a) and (b)	O	-CHF ₂	-H	-OCF ₃
H219 (a) and (b)	O	-CHF ₂	-H	- <i>tert</i> -butyl
H220 (a) and (b)	O	-CHF ₂	-H	- <i>iso</i> -propyl
H221 (a) and (b)	O	-Br	-Br	-H
H222 (a) and (b)	O	-Br	-Cl	-H
H223 (a) and (b)	O	-Br	-F	-H
H224 (a) and (b)	O	-Br	-CH ₃	-H
H225 (a) and (b)	O	-Br	-CF ₃	-H
H226 (a) and (b)	O	-Br	-OCH ₃	-H
H227 (a) and (b)	O	-Br	-OCH ₂ CH ₃	-H
H228 (a) and (b)	O	-Br	-OCF ₃	-H
H229 (a) and (b)	O	-Br	- <i>tert</i> -butyl	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H230 (a) and (b)	O	-Br	- <i>iso</i> -propyl	-H
H231 (a) and (b)	O	-Br	-CH ₃	-CH ₃
H232 (a) and (b)	O	-Br	-H	-H
H233 (a) and (b)	O	-Br	-H	-Cl
H234 (a) and (b)	O	-Br	-H	-Br
H235 (a) and (b)	O	-Br	-H	-F
H236 (a) and (b)	O	-Br	-H	-CH ₃
H237 (a) and (b)	O	-Br	-H	-CF ₃
H238 (a) and (b)	O	-Br	-H	-OCH ₃
H239 (a) and (b)	O	-Br	-H	-OCH ₂ CH ₃
H240 (a) and (b)	O	-Br	-H	-OCF ₃
H241 (a) and (b)	O	-Br	-H	- <i>tert</i> -butyl
H242 (a) and (b)	O	-Br	-H	- <i>iso</i> -propyl
H243 (a) and (b)	O	-I	-Cl	-H
H244 (a) and (b)	O	-I	-Br	-H
H245 (a) and (b)	O	-I	-F	-H
H246 (a) and (b)	O	-I	-CH ₃	-H
H247 (a) and (b)	O	-I	-CF ₃	-H
H248 (a) and (b)	O	-I	-OCH ₃	-H
H249 (a) and (b)	O	-I	-OCH ₂ CH ₃	-H
H250 (a) and (b)	O	-I	-OCF ₃	-H
H251 (a) and (b)	O	-I	- <i>tert</i> -butyl	-H
H252 (a) and (b)	O	-I	- <i>iso</i> -propyl	-H
H253 (a) and (b)	O	-I	-CH ₃	-CH ₃
H254 (a) and (b)	O	-I	-H	-H
H255 (a) and (b)	O	-I	-H	-Cl
H256 (a) and (b)	O	-I	-H	-Br
H257 (a) and (b)	O	-I	-H	-F
H258 (a) and (b)	O	-I	-H	-CH ₃
H259 (a) and (b)	O	-I	-H	-CF ₃
H260 (a) and (b)	O	-I	-H	-OCH ₃
H261 (a) and (b)	O	-I	-H	-OCH ₂ CH ₃
H262 (a) and (b)	O	-I	-H	-OCF ₃
H263 (a) and (b)	O	-I	-H	- <i>tert</i> -butyl
H264 (a) and (b)	O	-I	-H	- <i>iso</i> -propyl
H265 (a) and (b)	NH	-Cl	-Cl	-H
H266 (a) and (b)	NH	-Cl	-Br	-H
H267 (a) and (b)	NH	-Cl	-F	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H268 (a) and (b)	NH	-Cl	-CH ₃	-H
H269 (a) and (b)	NH	-Cl	-CF ₃	-H
H270 (a) and (b)	NH	-Cl	-OCH ₃	-H
H271 (a) and (b)	NH	-Cl	-OCH ₂ CH ₃	-H
H272 (a) and (b)	NH	-Cl	-OCF ₃	-H
H273 (a) and (b)	NH	-Cl	<i>-tert-butyl</i>	-H
H274 (a) and (b)	NH	-Cl	<i>-iso-propyl</i>	-H
H275 (a) and (b)	NH	-Cl	-CH ₃	-CH ₃
H276 (a) and (b)	NH	-Cl	-H	-H
H277 (a) and (b)	NH	-Cl	-H	-CH ₃
H278 (a) and (b)	NH	-Cl	-H	-Cl
H279 (a) and (b)	NH	-Cl	-H	-Br
H280 (a) and (b)	NH	-Cl	-H	-F
H281 (a) and (b)	NH	-Cl	-H	-CF ₃
H282 (a) and (b)	NH	-Cl	-H	-OCH ₃
H283 (a) and (b)	NH	-Cl	-H	-OCH ₂ CH ₃
H284 (a) and (b)	NH	-Cl	-H	-OCF ₃
H285 (a) and (b)	NH	-Cl	-H	<i>-tert-butyl</i>
H286 (a) and (b)	NH	-Cl	-H	<i>-iso-propyl</i>
H287 (a) and (b)	NH	-CH ₃	-Cl	-H
H288 (a) and (b)	NH	-CH ₃	-Br	-H
H289 (a) and (b)	NH	-CH ₃	-F	-H
H290 (a) and (b)	NH	-CH ₃	-CH ₃	-H
H291 (a) and (b)	NH	-CH ₃	-CF ₃	-H
H292 (a) and (b)	NH	-CH ₃	-OCH ₃	-H
H293 (a) and (b)	NH	-CH ₃	-OCH ₂ CH ₃	-H
H294 (a) and (b)	NH	-CH ₃	-OCF ₃	-H
H295 (a) and (b)	NH	-CH ₃	<i>-tert-butyl</i>	-H
H296 (a) and (b)	NH	-CH ₃	<i>-iso-propyl</i>	-H
H297 (a) and (b)	NH	-CH ₃	-CH ₃	-CH ₃
H298 (a) and (b)	NH	-CH ₃	-H	-H
H299 (a) and (b)	NH	-CH ₃	-H	-Cl
H300 (a) and (b)	NH	-CH ₃	-H	-Br
H301 (a) and (b)	NH	-CH ₃	-H	-F
H302 (a) and (b)	NH	-CH ₃	-H	-CH ₃
H303 (a) and (b)	NH	-CH ₃	-H	-CF ₃
H304 (a) and (b)	NH	-CH ₃	-H	-OCH ₃
H305 (a) and (b)	NH	-CH ₃	-H	-OCH ₂ CH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H306 (a) and (b)	NH	-CH ₃	-H	-OCF ₃
H307 (a) and (b)	NH	-CH ₃	-H	- <i>tert</i> -butyl
H308 (a) and (b)	NH	-CH ₃	-H	- <i>iso</i> -propyl
H309 (a) and (b)	NH	-CF ₃	-Cl	-H
H310 (a) and (b)	NH	-CF ₃	-Br	-H
H311 (a) and (b)	NH	-CF ₃	-F	-H
H312 (a) and (b)	NH	-CF ₃	-CH ₃	-H
H313 (a) and (b)	NH	-CF ₃	-CF ₃	-H
H314 (a) and (b)	NH	-CF ₃	-OCH ₃	-H
H315 (a) and (b)	NH	-CF ₃	-OCH ₂ CH ₃	-H
H316 (a) and (b)	NH	-CF ₃	-OCF ₃	-H
H317 (a) and (b)	NH	-CF ₃	- <i>tert</i> -butyl	-H
H318 (a) and (b)	NH	-CF ₃	- <i>iso</i> -propyl	-H
H319 (a) and (b)	NH	-CF ₃	-CH ₃	-CH ₃
H320 (a) and (b)	NH	-CF ₃	-H	-H
H321 (a) and (b)	NH	-CF ₃	-H	-Cl
H322 (a) and (b)	NH	-CF ₃	-H	-Br
H323 (a) and (b)	NH	-CF ₃	-H	-F
H324 (a) and (b)	NH	-CF ₃	-H	-CH ₃
H325 (a) and (b)	NH	-CF ₃	-H	-CF ₃
H326 (a) and (b)	NH	-CF ₃	-H	-OCH ₃
H327 (a) and (b)	NH	-CF ₃	-H	-OCH ₂ CH ₃
H328 (a) and (b)	NH	-CF ₃	-H	-OCF ₃
H329 (a) and (b)	NH	-CF ₃	-H	- <i>tert</i> -butyl
H330 (a) and (b)	NH	-CF ₃	-H	- <i>iso</i> -propyl
H331 (a) and (b)	NH	-CHF ₂	-Cl	-H
H332 (a) and (b)	NH	-CHF ₂	-Br	-H
H333 (a) and (b)	NH	-CHF ₂	-F	-H
H334 (a) and (b)	NH	-CHF ₂	-CH ₃	-H
H335 (a) and (b)	NH	-CHF ₂	-CF ₃	-H
H336 (a) and (b)	NH	-CHF ₂	-OCH ₃	-H
H337 (a) and (b)	NH	-CHF ₂	-OCH ₂ CH ₃	-H
H338 (a) and (b)	NH	-CHF ₂	-OCF ₃	-H
H339 (a) and (b)	NH	-CHF ₂	- <i>tert</i> -butyl	-H
H340 (a) and (b)	NH	-CHF ₂	- <i>iso</i> -propyl	-H
H341 (a) and (b)	NH	-CHF ₂	-CH ₃	-CH ₃
H342 (a) and (b)	NH	-CHF ₂	-H	-H
H343 (a) and (b)	NH	-CHF ₂	-H	-Cl

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H344 (a) and (b)	NH	-CHF ₂	-H	-Br
H345 (a) and (b)	NH	-CHF ₂	-H	-F
H346 (a) and (b)	NH	-CHF ₂	-H	-CH ₃
H347 (a) and (b)	NH	-CHF ₂	-H	-CF ₃
H348 (a) and (b)	NH	-CHF ₂	-H	-OCH ₃
H349 (a) and (b)	NH	-CHF ₂	-H	-OCH ₂ CH ₃
H350 (a) and (b)	NH	-CHF ₂	-H	-OCF ₃
H351 (a) and (b)	NH	-CHF ₂	-H	- <i>tert</i> -butyl
H352 (a) and (b)	NH	-CHF ₂	-H	- <i>iso</i> -propyl
H353 (a) and (b)	NH	-Br	-Br	-H
H354 (a) and (b)	NH	-Br	-Cl	-H
H355 (a) and (b)	NH	-Br	-F	-H
H356 (a) and (b)	NH	-Br	-CH ₃	-H
H357 (a) and (b)	NH	-Br	-CF ₃	-H
H358 (a) and (b)	NH	-Br	-OCH ₃	-H
H359 (a) and (b)	NH	-Br	-OCH ₂ CH ₃	-H
H360 (a) and (b)	NH	-Br	-OCF ₃	-H
H361 (a) and (b)	NH	-Br	- <i>tert</i> -butyl	-H
H362 (a) and (b)	NH	-Br	- <i>iso</i> -propyl	-H
H363 (a) and (b)	NH	-Br	-CH ₃	-CH ₃
H364 (a) and (b)	NH	-Br	-H	-H
H365 (a) and (b)	NH	-Br	-H	-Cl
H366 (a) and (b)	NH	-Br	-H	-Br
H367 (a) and (b)	NH	-Br	-H	-F
H368 (a) and (b)	NH	-Br	-H	-CH ₃
H369 (a) and (b)	NH	-Br	-H	-CF ₃
H370 (a) and (b)	NH	-Br	-H	-OCH ₃
H371 (a) and (b)	NH	-Br	-H	-OCH ₂ CH ₃
H372 (a) and (b)	NH	-Br	-H	-OCF ₃
H373 (a) and (b)	NH	-Br	-H	- <i>tert</i> -butyl
H374 (a) and (b)	NH	-Br	-H	- <i>iso</i> -propyl
H375 (a) and (b)	NH	-I	-Cl	-H
H376 (a) and (b)	NH	-I	-Br	-H
H377 (a) and (b)	NH	-I	-F	-H
H378 (a) and (b)	NH	-I	-CH ₃	-H
H379 (a) and (b)	NH	-I	-CF ₃	-H
H380 (a) and (b)	NH	-I	-OCH ₃	-H
H381 (a) and (b)	NH	-I	-OCH ₂ CH ₃	-H

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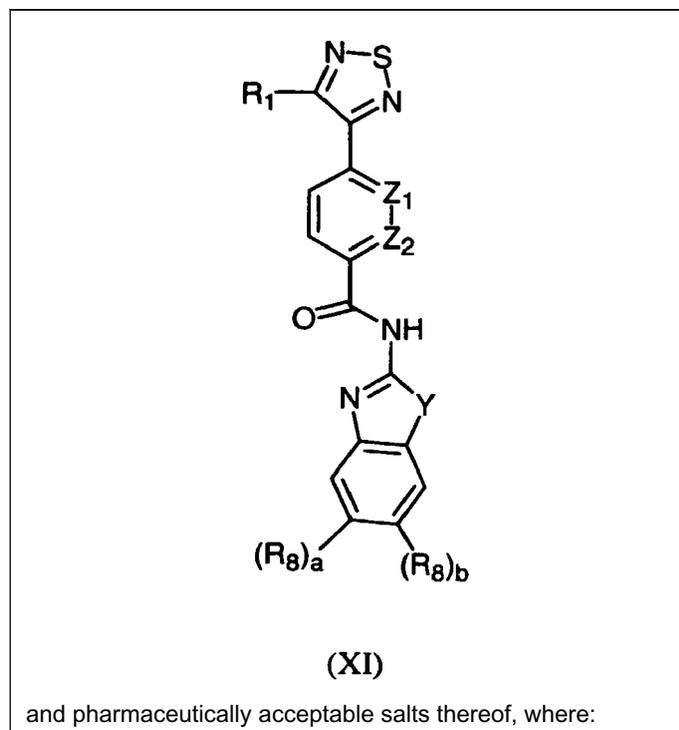
Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
H382 (a) and (b)	NH	-I	-OCF ₃	-H
H383 (a) and (b)	NH	-I	- <i>tert</i> -butyl	-H
H384 (a) and (b)	NH	-I	- <i>iso</i> -propyl	-H
H385 (a) and (b)	NH	-I	-CH ₃	-CH ₃
H386 (a) and (b)	NH	-I	-H	-H
H387 (a) and (b)	NH	-I	-H	-Cl
H388 (a) and (b)	NH	-I	-H	-Br
H389 (a) and (b)	NH	-I	-H	-F
H390 (a) and (b)	NH	-I	-H	-CH ₃
H391 (a) and (b)	NH	-I	-H	-CF ₃
H392 (a) and (b)	NH	-I	-H	-OCH ₃
H393 (a) and (b)	NH	-I	-H	-OCH ₂ CH ₃
H394 (a) and (b)	NH	-I	-H	-OCF ₃
H395 (a) and (b)	NH	-I	-H	- <i>tert</i> -butyl
H396 (a) and (b)	NH	-I	-H	- <i>iso</i> -propyl

[0326] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

Table 9



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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I1(a and b)	S	-Cl	-Cl	-H
I2(a and b)	S	-Cl	-Br	-H
I3(a and b)	S	-Cl	-F	-H
I4(a and b)	S	-Cl	-CH ₃	-H
I5(a and b)	S	-Cl	-CF ₃	-H
I6(a and b)	S	-Cl	-OCH ₃	-H
I7(a and b)	S	-Cl	-OCH ₂ CH ₃	-H
I8(a and b)	S	-Cl	-OCF ₃	-H
I9(a and b)	S	-Cl	- <i>tert</i> -butyl	-H
I10(a and b)	S	-Cl	- <i>iso</i> -propyl	-H
I11(a and b)	S	-Cl	-CH ₃	-CH ₃
I12(a and b)	S	-Cl	-H	-H
I13(a and b)	S	-Cl	-H	-Cl
I14(a and b)	S	-Cl	-H	-Br
I15(a and b)	S	-Cl	-H	-F
I16(a and b)	S	-Cl	-H	-CH ₃
I17(a and b)	S	-Cl	-H	-CF ₃
I18(a and b)	S	-Cl	-H	-OCH ₃
I19(a and b)	S	-Cl	-H	-OCH ₂ CH ₃
I20(a and b)	S	-Cl	-H	-OCF ₃
I21(a and b)	S	-Cl	-H	- <i>tert</i> -butyl
I22(a and b)	S	-Cl	-H	- <i>iso</i> -propyl
I23(a and b)	S	-CH ₃	-Cl	-H
I24(a and b)	S	-CH ₃	-Br	-H
I25(a and b)	S	-CH ₃	-F	-H
I26(a and b)	S	-CH ₃	-CH ₃	-H
I27(a and b)	S	-CH ₃	-CF ₃	-H
I28(a and b)	S	-CH ₃	-OCH ₃	-H
I29(a and b)	S	-CH ₃	-OCH ₂ CH ₃	-H
I30(a and b)	S	-CH ₃	-OCF ₃	-H
I31(a and b)	S	-CH ₃	- <i>tert</i> -butyl	-H
I32(a and b)	S	-CH ₃	- <i>iso</i> -propyl	-H
I33(a and b)	S	-CH ₃	-CH ₃	-CH ₃
I34(a and b)	S	-CH ₃	-H	-H
I35(a and b)	S	-CH ₃	-H	-Cl
I36(a and b)	S	-CH ₃	-H	-Br
I37(a and b)	S	-CH ₃	-H	-F
I38(a and b)	S	-CH ₃	-H	-CH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I39(a and b)	S	-CH ₃	-H	-CF ₃
I40(a and b)	S	-CH ₃	-H	-OCH ₃
I41(a and b)	S	-CH ₃	-H	-OCH ₂ CH ₃
I42(a and b)	S	-CH ₃	-H	-OCF ₃
I43(a and b)	S	-CH ₃	-H	- <i>tert</i> -butyl
I44(a and b)	S	-CH ₃	-H	- <i>iso</i> -propyl
I45(a and b)	S	-CF ₃	-Cl	-H
I46(a and b)	S	-CF ₃	-Br	-H
I47(a and b)	S	-CF ₃	-F	-H
I48(a and b)	S	-CF ₃	-CH ₃	-H
I49(a and b)	S	-CF ₃	-CF ₃	-H
I50(a and b)	S	-CF ₃	-OCH ₃	-H
I51(a and b)	S	-CF ₃	-OCH ₂ CH ₃	-H
I52(a and b)	S	-CF ₃	-OCF ₃	-H
I53(a and b)	S	-CF ₃	- <i>tert</i> -butyl	-H
I54(a and b)	S	-CF ₃	- <i>iso</i> -propyl	-H
I55(a and b)	S	-CF ₃	-CH ₃	-CH ₃
I56(a and b)	S	-CF ₃	-H	-H
I57(a and b)	S	-CF ₃	-H	-Cl
I58(a and b)	S	-CF ₃	-H	-Br
I59(a and b)	S	-CF ₃	-H	-F
I60(a and b)	S	-CF ₃	-H	-CH ₃
I61(a and b)	S	-CF ₃	-H	-CF ₃
I62(a and b)	S	-CF ₃	-H	-OCH ₃
I63(a and b)	S	-CF ₃	-H	-OCH ₂ CH ₃
I64(a and b)	S	-CF ₃	-H	-OCF ₃
I65(a and b)	S	-CF ₃	-H	- <i>tert</i> -butyl
I66(a and b)	S	-CF ₃	-H	- <i>iso</i> -propyl
I67(a and b)	S	-CHF ₂	-Cl	-H
I68(a and b)	S	-CHF ₂	-Br	-H
I69(a and b)	S	-CHF ₂	-F	-H
I70(a and b)	S	-CHF ₂	-CH ₃	-H
I71(a and b)	S	-CHF ₂	-CF ₃	-H
I72(a and b)	S	-CHF ₂	-OCH ₃	-H
I73(a and b)	S	-CHF ₂	-OCH ₂ CH ₃	-H
I74(a and b)	S	-CHF ₂	-OCF ₃	-H
I75(a and b)	S	-CHF ₂	- <i>tert</i> -butyl	-H
I76(a and b)	S	-CHF ₂	- <i>iso</i> -propyl	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I77(a and b)	S	-CHF ₂	-CH ₃	-CH ₃
I78(a and b)	S	-CHF ₂	-H	-H
I79(a and b)	S	-CHF ₂	-H	-Cl
I80(a and b)	S	-CHF ₂	-H	-Br
I81(a and b)	S	-CHF ₂	-H	-F
I82(a and b)	S	-CHF ₂	-H	-CH ₃
I83(a and b)	S	-CHF ₂	-H	-CF ₃
I84(a and b)	S	-CHF ₂	-H	-OCH ₃
I85(a and b)	S	-CHF ₂	-H	-OCH ₂ CH ₃
I86(a and b)	S	-CHF ₂	-H	-OCF ₃
I87(a and b)	S	-CHF ₂	-H	<i>-tert-butyl</i>
I88(a and b)	S	-CHF ₂	-H	<i>-iso-propyl</i>
I89(a and b)	S	-Br	-Br	-H
I90(a and b)	S	-Br	-Cl	-H
I91(a and b)	S	-Br	-F	-H
I92(a and b)	S	-Br	-CH ₃	-H
I93(a and b)	S	-Br	-CF ₃	-H
I94(a and b)	S	-Br	-OCH ₃	-H
I95(a and b)	S	-Br	-OCH ₂ CH ₃	-H
I96(a and b)	S	-Br	-OCF ₃	-H
I97(a and b)	S	-Br	<i>-tert-butyl</i>	-H
I98(a and b)	S	-Br	<i>-iso-propyl</i>	-H
I99(a and b)	S	-Br	-CH ₃	-CH ₃
I100(a and b)	S	-Br	-H	-H
I101(a and b)	S	-Br	-H	-Cl
I102(a and b)	S	-Br	-H	-Br
I103(a and b)	S	-Br	-H	-F
I104(a and b)	S	-Br	-H	-CH ₃
I105(a and b)	S	-Br	-H	-CF ₃
I106(a and b)	S	-Br	-H	-OCH ₃
I107(a and b)	S	-Br	-H	-OCH ₂ CH ₃
I108(a and b)	S	-Br	-H	-OCF ₃
I109(a and b)	S	-Br	-H	<i>-tert-butyl</i>
I110(a and b)	S	-Br	-H	<i>-iso-propyl</i>
I111(a and b)	S	-I	-Cl	-H
I112(a and b)	S	-I	-Br	-H
I113(a and b)	S	-I	-F	-H
I114(a and b)	S	-I	-CH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I115(a and b)	S	-I	-CF ₃	-H
I116(a and b)	S	-I	-OCH ₃	-H
I117(a and b)	S	-I	-OCH ₂ CH ₃	-H
I118(a and b)	S	-I	-OCF ₃	-H
I119(a and b)	S	-I	- <i>tert</i> -butyl	-H
I120(a and b)	S	-I	- <i>iso</i> -propyl	-H
I121(a and b)	S	-I	-CH ₃	-CH ₃
I122(a and b)	S	-I	-H	-H
I123(a and b)	S	-I	-H	-Cl
I124(a and b)	S	-I	-H	-Br
I125(a and b)	S	-I	-H	-F
I126(a and b)	S	-I	-H	-CH ₃
I127(a and b)	S	-I	-H	-CF ₃
I128(a and b)	S	-I	-H	-OCH ₃
I129(a and b)	S	-I	-H	-OCH ₂ CH ₃
I130(a and b)	S	-I	-H	-OCF ₃
I131(a and b)	S	-I	-H	- <i>tert</i> -butyl
I132(a and b)	S	-I	-H	- <i>iso</i> -propyl
I133(a and b)	O	-Cl	-Cl	-H
I134(a and b)	O	-Cl	-Br	-H
I135(a and b)	O	-Cl	-F	-H
I136(a and b)	O	-Cl	-CH ₃	-H
I137(a and b)	O	-Cl	-CF ₃	-H
I138(a and b)	O	-Cl	-OCH ₃	-H
I139(a and b)	O	-Cl	-OCH ₂ CH ₃	-H
I140(a and b)	O	-Cl	-OCF ₃	-H
I141(a and b)	O	-Cl	- <i>tert</i> -butyl	-H
I142(a and b)	O	-Cl	- <i>iso</i> -propyl	-H
I143(a and b)	O	-Cl	-CH ₃	-CH ₃
I144(a and b)	O	-Cl	-H	-H
I145(a and b)	O	-Cl	-H	-CH ₃
I146(a and b)	O	-Cl	-H	-Cl
I147(a and b)	O	-Cl	-H	-Br
I148(a and b)	O	-Cl	-H	-F
I149(a and b)	O	-Cl	-H	-CF ₃
I150(a and b)	O	-Cl	-H	-OCH ₃
I151(a and b)	O	-Cl	-H	-OCH ₂ CH ₃
I152(a and b)	O	-Cl	-H	-OCF ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I153(a and b)	O	-Cl	-H	- <i>tert</i> -butyl
I154(a and b)	O	-Cl	-H	- <i>iso</i> -propyl
I155(a and b)	O	-CH ₃	-Cl	-H
I156(a and b)	O	-CH ₃	-Br	-H
I157(a and b)	O	-CH ₃	-F	-H
I158(a and b)	O	-CH ₃	-CH ₃	-H
I159(a and b)	O	-CH ₃	-CF ₃	-H
I160(a and b)	O	-CH ₃	-OCH ₃	-H
I161(a and b)	O	-CH ₃	-OCH ₂ CH ₃	-H
I162(a and b)	O	-CH ₃	-OCF ₃	-H
I163(a and b)	O	-CH ₃	- <i>tert</i> -butyl	-H
I164(a and b)	O	-CH ₃	- <i>iso</i> -propyl	-H
I165(a and b)	O	-CH ₃	-CH ₃	-CH ₃
I166(a and b)	O	-CH ₃	-H	-H
I167(a and b)	O	-CH ₃	-H	-Cl
I168(a and b)	O	-CH ₃	-H	-Br
I169(a and b)	O	-CH ₃	-H	-F
I170(a and b)	O	-CH ₃	-H	-CH ₃
I171(a and b)	O	-CH ₃	-H	-CF ₃
I172(a and b)	O	-CH ₃	-H	-OCH ₃
I173(a and b)	O	-CH ₃	-H	-OCH ₂ CH ₃
I174(a and b)	O	-CH ₃	-H	-OCF ₃
I175(a and b)	O	-CH ₃	-H	- <i>tert</i> -butyl
I176(a and b)	O	-CH ₃	-H	- <i>iso</i> -propyl
I177(a and b)	O	-CF ₃	-Cl	-H
I178(a and b)	O	-CF ₃	-Br	-H
I179(a and b)	O	-CF ₃	-F	-H
I180(a and b)	O	-CF ₃	-CH ₃	-H
I181(a and b)	O	-CF ₃	-CF ₃	-H
I182(a and b)	O	-CF ₃	-OCH ₃	-H
I183(a and b)	O	-CF ₃	-OCH ₂ CH ₃	-H
I184(a and b)	O	-CF ₃	-OCF ₃	-H
I185(a and b)	O	-CF ₃	- <i>tert</i> -butyl	-H
I186(a and b)	O	-CF ₃	- <i>iso</i> -propyl	-H
I187(a and b)	O	-CF ₃	-CH ₃	-CH ₃
I188(a and b)	O	-CF ₃	-H	-H
I189(a and b)	O	-CF ₃	-H	-Cl
I190(a and b)	O	-CF ₃	-H	-Br

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I191(a and b)	O	-CF ₃	-H	-F
I192(a and b)	O	-CF ₃	-H	-CH ₃
I193(a and b)	O	-CF ₃	-H	-CF ₃
I194(a and b)	O	-CF ₃	-H	-OCH ₃
I195(a and b)	O	-CF ₃	-H	-OCH ₂ CH ₃
I196(a and b)	O	-CF ₃	-H	-OCF ₃
I197(a and b)	O	-CF ₃	-H	- <i>tert</i> -butyl
I198(a and b)	O	-CF ₃	-H	- <i>iso</i> -propyl
I199(a and b)	O	-CHF ₂	-Cl	-H
I200(a and b)	O	-CHF ₂	-Br	-H
I201(a and b)	O	-CHF ₂	-F	-H
I202(a and b)	O	-CHF ₂	-CH ₃	-H
I203(a and b)	O	-CHF ₂	-CF ₃	-H
I204(a and b)	O	-CHF ₂	-OCH ₃	-H
I205(a and b)	O	-CHF ₂	-OCH ₂ CH ₃	-H
I206(a and b)	O	-CHF ₂	-OCF ₃	-H
I207(a and b)	O	-CHF ₂	- <i>tert</i> -butyl	-H
I208(a and b)	O	-CHF ₂	- <i>iso</i> -propyl	-H
I209(a and b)	O	-CHF ₂	-CH ₃	-CH ₃
I210(a and b)	O	-CHF ₂	-H	-H
I211(a and b)	O	-CHF ₂	-H	-Cl
I212(a and b)	O	-CHF ₂	-H	-Br
I213(a and b)	O	-CHF ₂	-H	-F
I214(a and b)	O	-CHF ₂	-H	-CH ₃
I215(a and b)	O	-CHF ₂	-H	-CF ₃
I216(a and b)	O	-CHF ₂	-H	-OCH ₃
I217(a and b)	O	-CHF ₂	-H	-OCH ₂ CH ₃
I218(a and b)	O	-CHF ₂	-H	-OCF ₃
I219(a and b)	O	-CHF ₂	-H	- <i>tert</i> -butyl
I220(a and b)	O	-CHF ₂	-H	- <i>iso</i> -propyl
I221(a and b)	O	-Br	-Br	-H
I222(a and b)	O	-Br	-Cl	-H
I223(a and b)	O	-Br	-F	-H
I224(a and b)	O	-Br	-CH ₃	-H
I225(a and b)	O	-Br	-CF ₃	-H
I226(a and b)	O	-Br	-OCH ₃	-H
I227(a and b)	O	-Br	-OCH ₂ CH ₃	-H
I228(a and b)	O	-Br	-OCF ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I229(a and b)	O	-Br	- <i>tert</i> -butyl	-H
I230(a and b)	O	-Br	- <i>iso</i> -propyl	-H
I231(a and b)	O	-Br	-CH ₃	-CH ₃
I232(a and b)	O	-Br	-H	-H
I233(a and b)	O	-Br	-H	-Cl
I234(a and b)	O	-Br	-H	-Br
I235(a and b)	O	-Br	-H	-F
I236(a and b)	O	-Br	-H	-CH ₃
I237(a and b)	O	-Br	-H	-CF ₃
I238(a and b)	O	-Br	-H	-OCH ₃
I239(a and b)	O	-Br	-H	-OCH ₂ CH ₃
I240(a and b)	O	-Br	-H	-OCF ₃
I241(a and b)	O	-Br	-H	- <i>tert</i> -butyl
I242(a and b)	O	-Br	-H	- <i>iso</i> -propyl
I243(a and b)	O	-I	-Cl	-H
I244(a and b)	O	-I	-Br	-H
I245(a and b)	O	-I	-F	-H
I246(a and b)	O	-I	-CH ₃	-H
I247(a and b)	O	-I	-CF ₃	-H
I248(a and b)	O	-I	-OCH ₃	-H
I249(a and b)	O	-I	-OCH ₂ CH ₃	-H
I250(a and b)	O	-I	-OCF ₃	-H
I251(a and b)	O	-I	- <i>tert</i> -butyl	-H
I252(a and b)	O	-I	- <i>iso</i> -propyl	-H
I253(a and b)	O	-I	-CH ₃	-CH ₃
I254(a and b)	O	-I	-H	-H
I255(a and b)	O	-I	-H	-Cl
I256(a and b)	O	-I	-H	-Br
I257(a and b)	O	-I	-H	-F
I258(a and b)	O	-I	-H	-CH ₃
I259(a and b)	O	-I	-H	-CF ₃
I260(a and b)	O	-I	-H	-OCH ₃
I261(a and b)	O	-I	-H	-OCH ₂ CH ₃
I262(a and b)	O	-I	-H	-OCF ₃
I263(a and b)	O	-I	-H	- <i>tert</i> -butyl
I264(a and b)	O	-I	-H	- <i>iso</i> -propyl
I265(a and b)	NH	-Cl	-Cl	-H
I266(a and b)	NH	-Cl	-Br	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I267(a and b)	NH	-Cl	-F	-H
I268(a and b)	NH	-Cl	-CH ₃	-H
I269(a and b)	NH	-Cl	-CF ₃	-H
I270(a and b)	NH	-Cl	-OCH ₃	-H
I271(a and b)	NH	-Cl	-OCH ₂ CH ₃	-H
I272(a and b)	NH	-Cl	-OCF ₃	-H
I273(a and b)	NH	-Cl	- <i>tert</i> -butyl	-H
I274(a and b)	NH	-Cl	- <i>iso</i> -propyl	-H
I275(a and b)	NH	-Cl	-CH ₃	-CH ₃
I276(a and b)	NH	-Cl	-H	-H
I277(a and b)	NH	-Cl	-H	-CH ₃
I278(a and b)	NH	-Cl	-H	-Cl
I279(a and b)	NH	-Cl	-H	-Br
I280(a and b)	NH	-Cl	-H	-F
I281(a and b)	NH	-Cl	-H	-CF ₃
I282(a and b)	NH	-Cl	-H	-OCH ₃
I283(a and b)	NH	-Cl	-H	-OCH ₂ CH ₃
I284(a and b)	NH	-Cl	-H	-OCF ₃
I285(a and b)	NH	-Cl	-H	- <i>tert</i> -butyl
I286(a and b)	NH	-Cl	-H	- <i>iso</i> -propyl
I287(a and b)	NH	-CH ₃	-Cl	-H
I288(a and b)	NH	-CH ₃	-Br	-H
I289(a and b)	NH	-CH ₃	-F	-H
I290(a and b)	NH	-CH ₃	-CH ₃	-H
I291(a and b)	NH	-CH ₃	-CF ₃	-H
I292(a and b)	NH	-CH ₃	-OCH ₃	-H
I293(a and b)	NH	-CH ₃	-OCH ₂ CH ₃	-H
I294(a and b)	NH	-CH ₃	-OCF ₃	-H
I295(a and b)	NH	-CH ₃	- <i>tert</i> -butyl	-H
I296(a and b)	NH	-CH ₃	- <i>iso</i> -propyl	-H
I297(a and b)	NH	-CH ₃	-CH ₃	-CH ₃
I298(a and b)	NH	-CH ₃	-H	-H
I299(a and b)	NH	-CH ₃	-H	-Cl
I300(a and b)	NH	-CH ₃	-H	-Br
I301(a and b)	NH	-CH ₃	-H	-F
I302(a and b)	NH	-CH ₃	-H	-CH ₃
I303(a and b)	NH	-CH ₃	-H	-CF ₃
I304(a and b)	NH	-CH ₃	-H	-OCH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I305(a and b)	NH	-CH ₃	-H	-OCH ₂ CH ₃
I306(a and b)	NH	-CH ₃	-H	-OCF ₃
I307(a and b)	NH	-CH ₃	-H	- <i>tert</i> -butyl
I308(a and b)	NH	-CH ₃	-H	- <i>iso</i> -propyl
I309(a and b)	NH	-CF ₃	-Cl	-H
I310(a and b)	NH	-CF ₃	-Br	-H
I311(a and b)	NH	-CF ₃	-F	-H
I312(a and b)	NH	-CF ₃	-CH ₃	-H
I313(a and b)	NH	-CF ₃	-CF ₃	-H
I314(a and b)	NH	-CF ₃	-OCH ₃	-H
I315(a and b)	NH	-CF ₃	-OCH ₂ CH ₃	-H
I316(a and b)	NH	-CF ₃	-OCF ₃	-H
I317(a and b)	NH	-CF ₃	- <i>tert</i> -butyl	-H
I318(a and b)	NH	-CF ₃	- <i>iso</i> -propyl	-H
I319(a and b)	NH	-CF ₃	-CH ₃	-CH ₃
I320(a and b)	NH	-CF ₃	-H	-H
I321(a and b)	NH	-CF ₃	-H	-Cl
I322(a and b)	NH	-CF ₃	-H	-Br
I323(a and b)	NH	-CF ₃	-H	-F
I324(a and b)	NH	-CF ₃	-H	-CH ₃
I325(a and b)	NH	-CF ₃	-H	-CF ₃
I326(a and b)	NH	-CF ₃	-H	-OCH ₃
I327(a and b)	NH	-CF ₃	-H	-OCH ₂ CH ₃
I328(a and b)	NH	-CF ₃	-H	-OCF ₃
I329(a and b)	NH	-CF ₃	-H	- <i>tert</i> -butyl
I330(a and b)	NH	-CF ₃	-H	- <i>iso</i> -propyl
I331(a and b)	NH	-CHF ₂	-Cl	-H
I332(a and b)	NH	-CHF ₂	-Br	-H
I333(a and b)	NH	-CHF ₂	-F	-H
I334(a and b)	NH	-CHF ₂	-CH ₃	-H
I335(a and b)	NH	-CHF ₂	-CF ₃	-H
I336(a and b)	NH	-CHF ₂	-OCH ₃	-H
I337(a and b)	NH	-CHF ₂	-OCH ₂ CH ₃	-H
I338(a and b)	NH	-CHF ₂	-OCF ₃	-H
I339(a and b)	NH	-CHF ₂	- <i>tert</i> -butyl	-H
I340(a and b)	NH	-CHF ₂	- <i>iso</i> -propyl	-H
I341(a and b)	NH	-CHF ₂	-CH ₃	-CH ₃
I342(a and b)	NH	-CHF ₂	-H	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I343(a and b)	NH	-CHF ₂	-H	-Cl
I344(a and b)	NH	-CHF ₂	-H	-Br
I345(a and b)	NH	-CHF ₂	-H	-F
I346(a and b)	NH	-CHF ₂	-H	-CH ₃
I347(a and b)	NH	-CHF ₂	-H	-CF ₃
I348(a and b)	NH	-CHF ₂	-H	-OCH ₃
I349(a and b)	NH	-CHF ₂	-H	-OCH ₂ CH ₃
I350(a and b)	NH	-CHF ₂	-H	-OCF ₃
I351(a and b)	NH	-CHF ₂	-H	- <i>tert</i> -butyl
I352(a and b)	NH	-CHF ₂	-H	- <i>iso</i> -propyl
I353(a and b)	NH	-Br	-Br	-H
I354(a and b)	NH	-Br	-Cl	-H
I355(a and b)	NH	-Br	-F	-H
I356(a and b)	NH	-Br	-CH ₃	-H
I357(a and b)	NH	-Br	-CF ₃	-H
I358(a and b)	NH	-Br	-OCH ₃	-H
I359(a and b)	NH	-Br	-OCH ₂ CH ₃	-H
I360(a and b)	NH	-Br	-OCF ₃	-H
I361(a and b)	NH	-Br	- <i>tert</i> -butyl	-H
I362(a and b)	NH	-Br	- <i>iso</i> -propyl	-H
I363(a and b)	NH	-Br	-CH ₃	-CH ₃
I364(a and b)	NH	-Br	-H	-H
I365(a and b)	NH	-Br	-H	-Cl
I366(a and b)	NH	-Br	-H	-Br
I367(a and b)	NH	-Br	-H	-F
I368(a and b)	NH	-Br	-H	-CH ₃
I369(a and b)	NH	-Br	-H	-CF ₃
I370(a and b)	NH	-Br	-H	-OCH ₃
I371(a and b)	NH	-Br	-H	-OCH ₂ CH ₃
I372(a and b)	NH	-Br	-H	-OCF ₃
I373(a and b)	NH	-Br	-H	- <i>tert</i> -butyl
I374(a and b)	NH	-Br	-H	- <i>iso</i> -propyl
I375(a and b)	NH	-I	-Cl	-H
I376(a and b)	NH	-I	-Br	-H
I377(a and b)	NH	-I	-F	-H
I378(a and b)	NH	-I	-CH ₃	-H
I379(a and b)	NH	-I	-CF ₃	-H
I380(a and b)	NH	-I	-OCH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
I381(a and b)	NH	-I	-OCH ₂ CH ₃	-H
I382(a and b)	NH	-I	-OCF ₃	-H
I383(a and b)	NH	-I	- <i>tert</i> -butyl	-H
I384(a and b)	NH	-I	- <i>iso</i> -propyl	-H
I385(a and b)	NH	-I	-CH ₃	-CH ₃
I386(a and b)	NH	-I	-H	-H
I387(a and b)	NH	-I	-H	-Cl
I388(a and b)	NH	-I	-H	-Br
I389(a and b)	NH	-I	-H	-F
I390(a and b)	NH	-I	-H	-CH ₃
I391(a and b)	NH	-I	-H	-CF ₃
I392(a and b)	NH	-I	-H	-OCH ₃
I393(a and b)	NH	-I	-H	-OCH ₂ CH ₃
I394(a and b)	NH	-I	-H	-OCF ₃
I395(a and b)	NH	-I	-H	- <i>tert</i> -butyl
I396(a and b)	NH	-I	-H	- <i>iso</i> -propyl

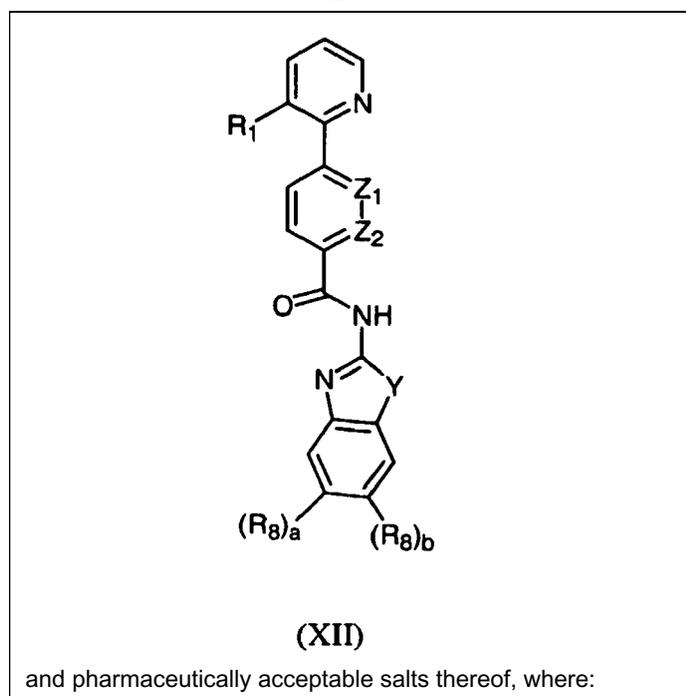
[0327] In the column labeled "Compound":

(a) means Z₁ is CH and Z₂ is N; and

(b) means Z₁ is N and Z₂ is CH.

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Table 10



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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J1(a and b)	S	-Cl	-Cl	-H
J2(a and b)	S	-Cl	-Br	-H
J3(a and b)	S	-Cl	-F	-H
J4(a and b)	S	-Cl	-CH ₃	-H
J5(a and b)	S	-Cl	-CF ₃	-H
J6(a and b)	S	-Cl	-OCH ₃	-H
J7(a and b)	S	-Cl	-OCH ₂ CH ₃	-H
J8(a and b)	S	-Cl	-OCF ₃	-H
J9(a and b)	S	-Cl	- <i>tert</i> -butyl	-H
J10(a and b)	S	-Cl	- <i>iso</i> -propyl	-H
J11(a and b)	S	-Cl	-CH ₃	-CH ₃
J 12(a and b)	S	-Cl	-H	-H
J13(a and b)	S	-Cl	-H	-Cl
J14(a and b)	S	-Cl	-H	-Br
J15(a and b)	S	-Cl	-H	-F
J16(a and b)	S	-Cl	-H	-CH ₃
J17(a and b)	S	-Cl	-H	-CF ₃
J18(a and b)	S	-Cl	-H	-OCH ₃
J19(a and b)	S	-Cl	-H	-OCH ₂ CH ₃
J20(a and b)	S	-Cl	-H	-OCF ₃
J21(a and b)	S	-Cl	-H	- <i>tert</i> -butyl
J22(a and b)	S	-Cl	-H	- <i>iso</i> -propyl
J23(a and b)	S	-CH ₃	-Cl	-H
J24(a and b)	S	-CH ₃	-Br	-H
J25(a and b)	S	-CH ₃	-F	-H
J26(a and b)	S	-CH ₃	-CH ₃	-H
J27(a and b)	S	-CH ₃	-CF ₃	-H
J28(a and b)	S	-CH ₃	-OCH ₃	-H
J29(a and b)	S	-CH ₃	-OCH ₂ CH ₃	-H
J30(a and b)	S	-CH ₃	-OCF ₃	-H
J31(a and b)	S	-CH ₃	- <i>tert</i> -butyl	-H
J32(a and b)	S	-CH ₃	- <i>iso</i> -propyl	-H
J33(a and b)	S	-CH ₃	-CH ₃	-CH ₃
J34(a and b)	S	-CH ₃	-H	-H
J35(a and b)	S	-CH ₃	-H	-Cl
J36(a and b)	S	-CH ₃	-H	-Br
J37(a and b)	S	-CH ₃	-H	-F
J38(a and b)	S	-CH ₃	-H	-CH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J39(a and b)	S	-CH ₃	-H	-CF ₃
J40(a and b)	S	-CH ₃	-H	-OCH ₃
J41(a and b)	S	-CH ₃	-H	-OCH ₂ CH ₃
J42(a and b)	S	-CH ₃	-H	-OCF ₃
J43(a and b)	S	-CH ₃	-H	- <i>tert</i> -butyl
J44(a and b)	S	-CH ₃	-H	- <i>iso</i> -propyl
J45(a and b)	S	-CF ₃	-Cl	-H
J46(a and b)	S	-CF ₃	-Br	-H
J47(a and b)	S	-CF ₃	-F	-H
J48(a and b)	S	-CF ₃	-CH ₃	-H
J49(a and b)	S	-CF ₃	-CF ₃	-H
J50(a and b)	S	-CF ₃	-OCH ₃	-H
J51(a and b)	S	-CF ₃	-OCH ₂ CH ₃	-H
J52(a and b)	S	-CF ₃	-OCF ₃	-H
J53(a and b)	S	-CF ₃	- <i>tert</i> -butyl	-H
J54(a and b)	S	-CF ₃	- <i>iso</i> -propyl	-H
J55(a and b)	S	-CF ₃	-CH ₃	-CH ₃
J56(a and b)	S	-CF ₃	-H	-H
J57(a and b)	S	-CF ₃	-H	-Cl
J58(a and b)	S	-CF ₃	-H	-Br
J59(a and b)	S	-CF ₃	-H	-F
J60(a and b)	S	-CF ₃	-H	-CH ₃
J61(a and b)	S	-CF ₃	-H	-CF ₃
J62(a and b)	S	-CF ₃	-H	-OCH ₃
J63(a and b)	S	-CF ₃	-H	-OCH ₂ CH ₃
J64(a and b)	S	-CF ₃	-H	-OCF ₃
J65(a and b)	S	-CF ₃	-H	- <i>tert</i> -butyl
J66(a and b)	S	-CF ₃	-H	- <i>iso</i> -propyl
J67(a and b)	S	-CHF ₂	-Cl	-H
J68(a and b)	S	-CHF ₂	-Br	-H
J69(a and b)	S	-CHF ₂	-F	-H
J70(a and b)	S	-CHF ₂	-CH ₃	-H
J71(a and b)	S	-CHF ₂	-CF ₃	-H
J72(a and b)	S	-CHF ₂	-OCH ₃	-H
J73(a and b)	S	-CHF ₂	-OCH ₂ CH ₃	-H
J74(a and b)	S	-CHF ₂	-OCF ₃	-H
J75(a and b)	S	-CHF ₂	- <i>tert</i> -butyl	-H
J76(a and b)	S	-CHF ₂	- <i>iso</i> -propyl	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J77(a and b)	S	-CHF ₂	-CH ₃	-CH ₃
J78(a and b)	S	-CHF ₂	-H	-H
J79(a and b)	S	-CHF ₂	-H	-Cl
J80(a and b)	S	-CHF ₂	-H	-Br
J81(a and b)	S	-CHF ₂	-H	-F
J82(a and b)	S	-CHF ₂	-H	-CH ₃
J83(a and b)	S	-CHF ₂	-H	-CF ₃
J84(a and b)	S	-CHF ₂	-H	-OCH ₃
J85(a and b)	S	-CHF ₂	-H	-OCH ₂ CH ₃
J86(a and b)	S	-CHF ₂	-H	-OCF ₃
J87(a and b)	S	-CHF ₂	-H	- <i>tert</i> -butyl
J88(a and b)	S	-CHF ₂	-H	- <i>iso</i> -propyl
J89(a and b)	S	-Br	-Br	-H
J90(a and b)	S	-Br	-Cl	-H
J91(a and b)	S	-Br	-F	-H
J92(a and b)	S	-Br	-CH ₃	-H
J93(a and b)	S	-Br	-CF ₃	-H
J94(a and b)	S	-Br	-OCH ₃	-H
J95(a and b)	S	-Br	-OCH ₂ CH ₃	-H
J96(a and b)	S	-Br	-OCF ₃	-H
J97(a and b)	S	-Br	- <i>tert</i> -butyl	-H
J98(a and b)	S	-Br	- <i>iso</i> -propyl	-H
J99(a and b)	S	-Br	-CH ₃	-CH ₃
J100(a and b)	S	-Br	-H	-H
J101(a and b)	S	-Br	-H	-Cl
J102(a and b)	S	-Br	-H	-Br
J103(a and b)	S	-Br	-H	-F
J104(a and b)	S	-Br	-H	-CH ₃
J105(a and b)	S	-Br	-H	-CF ₃
J106(a and b)	S	-Br	-H	-OCH ₃
J107(a and b)	S	-Br	-H	-OCH ₂ CH ₃
J108(a and b)	S	-Br	-H	-OCF ₃
J109(a and b)	S	-Br	-H	- <i>tert</i> -butyl
J110(a and b)	S	-Br	-H	- <i>iso</i> -propyl
J111(a and b)	S	-I	-Cl	-H
J112(a and b)	S	-I	-Br	-H
J113(a and b)	S	-I	-F	-H
J114(a and b)	S	-I	-CH ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J115(a and b)	S	-I	-CF ₃	-H
J116(a and b)	S	-I	-OCH ₃	-H
J117(a and b)	S	-I	-OCH ₂ CH ₃	-H
J118(a and b)	S	-I	-OCF ₃	-H
J119(a and b)	S	-I	- <i>tert</i> -butyl	-H
J120(a and b)	S	-I	- <i>iso</i> -propyl	-H
J121(a and b)	S	-I	-CH ₃	-CH ₃
J122(a and b)	S	-I	-H	-H
J123(a and b)	S	-I	-H	-Cl
J124(a and b)	S	-I	-H	-Br
J125(a and b)	S	-I	-H	-F
J126(a and b)	S	-I	-H	-CH ₃
J127(a and b)	S	-I	-H	-CF ₃
J128(a and b)	S	-I	-H	-OCH ₃
J129(a and b)	S	-I	-H	-OCH ₂ CH ₃
J130(a and b)	S	-I	-H	-OCF ₃
J131(a and b)	S	-I	-H	- <i>tert</i> -butyl
J132(a and b)	S	-I	-H	- <i>iso</i> -propyl
J133(a and b)	O	-Cl	-Cl	-H
J134(a and b)	O	-Cl	-Br	-H
J135(a and b)	O	-Cl	-F	-H
J136(a and b)	O	-Cl	-CH ₃	-H
J137(a and b)	O	-Cl	-CF ₃	-H
J138(a and b)	O	-Cl	-OCH ₃	-H
J139(a and b)	O	-Cl	-OCH ₂ CH ₃	-H
J140(a and b)	O	-Cl	-OCF ₃	-H
J141(a and b)	O	-Cl	- <i>tert</i> -butyl	-H
J142(a and b)	O	-Cl	- <i>iso</i> -propyl	-H
J143(a and b)	O	-Cl	-CH ₃	-CH ₃
J144(a and b)	O	-Cl	-H	-H
J145(a and b)	O	-Cl	-H	-CH ₃
J146(a and b)	O	-Cl	-H	-Cl
J147(a and b)	O	-Cl	-H	-Br
J148(a and b)	O	-Cl	-H	-F
J149(a and b)	O	-Cl	-H	-CF ₃
J150(a and b)	O	-Cl	-H	-OCH ₃
J151(a and b)	O	-Cl	-H	-OCH ₂ CH ₃
J152(a and b)	O	-Cl	-H	-OCF ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J153(a and b)	O	-Cl	-H	- <i>tert</i> -butyl
J154(a and b)	O	-Cl	-H	- <i>iso</i> -propyl
J155(a and b)	O	-CH ₃	-Cl	-H
J156(a and b)	O	-CH ₃	-Br	-H
J157(a and b)	O	-CH ₃	-F	-H
J158(a and b)	O	-CH ₃	-CH ₃	-H
J159(a and b)	O	-CH ₃	-CF ₃	-H
J160(a and b)	O	-CH ₃	-OCH ₃	-H
J161(a and b)	O	-CH ₃	-OCH ₂ CH ₃	-H
J162(a and b)	O	-CH ₃	-OCF ₃	-H
J163(a and b)	O	-CH ₃	- <i>tert</i> -butyl	-H
J164(a and b)	O	-CH ₃	- <i>iso</i> -propyl	-H
J165(a and b)	O	-CH ₃	-CH ₃	-CH ₃
J166(a and b)	O	-CH ₃	-H	-H
J167(a and b)	O	-CH ₃	-H	-Cl
J168(a and b)	O	-CH ₃	-H	-Br
J169(a and b)	O	-CH ₃	-H	-F
J170(a and b)	O	-CH ₃	-H	-CH ₃
J171(a and b)	O	-CH ₃	-H	-CF ₃
J172(a and b)	O	-CH ₃	-H	-OCH ₃
J173(a and b)	O	-CH ₃	-H	-OCH ₂ CH ₃
J174(a and b)	O	-CH ₃	-H	-OCF ₃
J175(a and b)	O	-CH ₃	-H	- <i>tert</i> -butyl
J176(a and b)	O	-CH ₃	-H	- <i>iso</i> -propyl
J177(a and b)	O	-CF ₃	-Cl	-H
J178(a and b)	O	-CF ₃	-Br	-H
J179(a and b)	O	-CF ₃	-F	-H
J180(a and b)	O	-CF ₃	-CH ₃	-H
J181(a and b)	O	-CF ₃	-CF ₃	-H
J182(a and b)	O	-CF ₃	-OCH ₃	-H
J183(a and b)	O	-CF ₃	-OCH ₂ CH ₃	-H
J184(a and b)	O	-CF ₃	-OCF ₃	-H
J185(a and b)	O	-CF ₃	- <i>tert</i> -butyl	-H
J186(a and b)	O	-CF ₃	- <i>iso</i> -propyl	-H
J187(a and b)	O	-CF ₃	-CH ₃	-CH ₃
J188(a and b)	O	-CF ₃	-H	-H
J189(a and b)	O	-CF ₃	-H	-Cl
J190(a and b)	O	-CF ₃	-H	-Br

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J191(a and b)	O	-CF ₃	-H	-F
J192(a and b)	O	-CF ₃	-H	-CH ₃
J193(a and b)	O	-CF ₃	-H	-CF ₃
J194(a and b)	O	-CF ₃	-H	-OCH ₃
J195(a and b)	O	-CF ₃	-H	-OCH ₂ CH ₃
J196(a and b)	O	-CF ₃	-H	-OCF ₃
J197(a and b)	O	-CF ₃	-H	- <i>tert</i> -butyl
J198(a and b)	O	-CF ₃	-H	- <i>iso</i> -propyl
J199(a and b)	O	-CHF ₂	-Cl	-H
J200(a and b)	O	-CHF ₂	-Br	-H
J201(a and b)	O	-CHF ₂	-F	-H
J202(a and b)	O	-CHF ₂	-CH ₃	-H
J203(a and b)	O	-CHF ₂	-CF ₃	-H
J204(a and b)	O	-CHF ₂	-OCH ₃	-H
J205(a and b)	O	-CHF ₂	-OCH ₂ CH ₃	-H
J206(a and b)	O	-CHF ₂	-OCF ₃	-H
J207(a and b)	O	-CHF ₂	- <i>tert</i> -butyl	-H
J208(a and b)	O	-CHF ₂	- <i>iso</i> -propyl	-H
J209(a and b)	O	-CHF ₂	-CH ₃	-CH ₃
J210(a and b)	O	-CHF ₂	-H	-H
J211(a and b)	O	-CHF ₂	-H	-Cl
J212(a and b)	O	-CHF ₂	-H	-Br
J213(a and b)	O	-CHF ₂	-H	-F
J214(a and b)	O	-CHF ₂	-H	-CH ₃
J215(a and b)	O	-CHF ₂	-H	-CF ₃
J216(a and b)	O	-CHF ₂	-H	-OCH ₃
J217(a and b)	O	-CHF ₂	-H	-OCH ₂ CH ₃
J218(a and b)	O	-CHF ₂	-H	-OCF ₃
J219(a and b)	O	-CHF ₂	-H	- <i>tert</i> -butyl
J220(a and b)	O	-CHF ₂	-H	- <i>iso</i> -propyl
J221(a and b)	O	-Br	-Br	-H
J222(a and b)	O	-Br	-Cl	-H
J223(a and b)	O	-Br	-F	-H
J224(a and b)	O	-Br	-CH ₃	-H
J225(a and b)	O	-Br	-CF ₃	-H
J226(a and b)	O	-Br	-OCH ₃	-H
J227(a and b)	O	-Br	-OCH ₂ CH ₃	-H
J228(a and b)	O	-Br	-OCF ₃	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J229(a and b)	O	-Br	- <i>tert</i> -butyl	-H
J230(a and b)	O	-Br	- <i>iso</i> -propyl	-H
J231(a and b)	O	-Br	-CH ₃	-CH ₃
J232(a and b)	O	-Br	-H	-H
J233(a and b)	O	-Br	-H	-Cl
J234(a and b)	O	-Br	-H	-Br
J235(a and b)	O	-Br	-H	-F
J236(a and b)	O	-Br	-H	-CH ₃
J237(a and b)	O	-Br	-H	-CF ₃
J238(a and b)	O	-Br	-H	-OCH ₃
J239(a and b)	O	-Br	-H	-OCH ₂ CH ₃
J240(a and b)	O	-Br	-H	-OCF ₃
J241(a and b)	O	-Br	-H	- <i>tert</i> -butyl
J242(a and b)	O	-Br	-H	- <i>iso</i> -propyl
J243(a and b)	O	-I	-Cl	-H
J244(a and b)	O	-I	-Br	-H
J245(a and b)	O	-I	-F	-H
J246(a and b)	O	-I	-CH ₃	-H
J247(a and b)	O	-I	-CF ₃	-H
J248(a and b)	O	-I	-OCH ₃	-H
J249(a and b)	O	-I	-OCH ₂ CH ₃	-H
J250(a and b)	O	-I	-OCF ₃	-H
J251(a and b)	O	-I	- <i>tert</i> -butyl	-H
J252(a and b)	O	-I	- <i>iso</i> -propyl	-H
J253(a and b)	O	-I	-CH ₃	-CH ₃
J254(a and b)	O	-I	-H	-H
J255(a and b)	O	-I	-H	-Cl
J256(a and b)	O	-I	-H	-Br
J257(a and b)	O	-I	-H	-F
J258(a and b)	O	-I	-H	-CH ₃
J259(a and b)	O	-I	-H	-CF ₃
J260(a and b)	O	-I	-H	-OCH ₃
J261(a and b)	O	-I	-H	-OCH ₂ CH ₃
J262(a and b)	O	-I	-H	-OCF ₃
J263(a and b)	O	-I	-H	- <i>tert</i> -butyl
J264(a and b)	O	-I	-H	- <i>iso</i> -propyl
J265(a and b)	NH	-Cl	-Cl	-H
J266(a and b)	NH	-Cl	-Br	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J267(a and b)	NH	-Cl	-F	-H
J268(a and b)	NH	-Cl	-CH ₃	-H
J269(a and b)	NH	-Cl	-CF ₃	-H
J270(a and b)	NH	-Cl	-OCH ₃	-H
J271(a and b)	NH	-Cl	-OCH ₂ CH ₃	-H
J272(a and b)	NH	-Cl	-OCF ₃	-H
J273(a and b)	NH	-Cl	<i>-tert-butyl</i>	-H
J274(a and b)	NH	-Cl	<i>-iso-propyl</i>	-H
J275(a and b)	NH	-Cl	-CH ₃	-CH ₃
J276(a and b)	NH	-Cl	-H	-H
J277(a and b)	NH	-Cl	-H	-CH ₃
J278(a and b)	NH	-Cl	-H	-Cl
J279(a and b)	NH	-Cl	-H	-Br
J280(a and b)	NH	-Cl	-H	-F
J281(a and b)	NH	-Cl	-H	-CF ₃
J282(a and b)	NH	-Cl	-H	-OCH ₃
J283(a and b)	NH	-Cl	-H	-OCH ₂ CH ₃
J284(a and b)	NH	-Cl	-H	-OCF ₃
J285(a and b)	NH	-Cl	-H	<i>-tert-butyl</i>
J286(a and b)	NH	-Cl	-H	<i>-iso-propyl</i>
J287(a and b)	NH	-CH ₃	-Cl	-H
J288(a and b)	NH	-CH ₃	-Br	-H
J289(a and b)	NH	-CH ₃	-F	-H
J290(a and b)	NH	-CH ₃	-CH ₃	-H
J291(a and b)	NH	-CH ₃	-CF ₃	-H
J292(a and b)	NH	-CH ₃	-OCH ₃	-H
J293(a and b)	NH	-CH ₃	-OCH ₂ CH ₃	-H
J294(a and b)	NH	-CH ₃	-OCF ₃	-H
J295(a and b)	NH	-CH ₃	<i>-tert-butyl</i>	-H
J296(a and b)	NH	-CH ₃	<i>-iso-propyl</i>	-H
J297(a and b)	NH	-CH ₃	-CH ₃	-CH ₃
J298(a and b)	NH	-CH ₃	-H	-H
J299(a and b)	NH	-CH ₃	-H	-Cl
J300(a and b)	NH	-CH ₃	-H	-Br
J301(a and b)	NH	-CH ₃	-H	-F
J302(a and b)	NH	-CH ₃	-H	-CH ₃
J303(a and b)	NH	-CH ₃	-H	-CF ₃
J304(a and b)	NH	-CH ₃	-H	-OCH ₃

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J305(a and b)	NH	-CH ₃	-H	-OCH ₂ CH ₃
J306(a and b)	NH	-CH ₃	-H	-OCF ₃
J307(a and b)	NH	-CH ₃	-H	- <i>tert</i> -butyl
J308(a and b)	NH	-CH ₃	-H	- <i>iso</i> -propyl
J309(a and b)	NH	-CF ₃	-Cl	-H
J310(a and b)	NH	-CF ₃	-Br	-H
J311(a and b)	NH	-CF ₃	-F	-H
J312(a and b)	NH	-CF ₃	-CH ₃	-H
J313(a and b)	NH	-CF ₃	-CF ₃	-H
J314(a and b)	NH	-CF ₃	-OCH ₃	-H
J315(a and b)	NH	-CF ₃	-OCH ₂ CH ₃	-H
J316(a and b)	NH	-CF ₃	-OCF ₃	-H
J317(a and b)	NH	-CF ₃	- <i>tert</i> -butyl	-H
J318(a and b)	NH	-CF ₃	- <i>iso</i> -propyl	-H
J319(a and b)	NH	-CF ₃	-CH ₃	-CH ₃
J320(a and b)	NH	-CF ₃	-H	-H
J321(a and b)	NH	-CF ₃	-H	-Cl
J322(a and b)	NH	-CF ₃	-H	-Br
J323(a and b)	NH	-CF ₃	-H	-F
J324(a and b)	NH	-CF ₃	-H	-CH ₃
J325(a and b)	NH	-CF ₃	-H	-CF ₃
J326(a and b)	NH	-CF ₃	-H	-OCH ₃
J327(a and b)	NH	-CF ₃	-H	-OCH ₂ CH ₃
J328(a and b)	NH	-CF ₃	-H	-OCF ₃
J329(a and b)	NH	-CF ₃	-H	- <i>tert</i> -butyl
J330(a and b)	NH	-CF ₃	-H	- <i>iso</i> -propyl
J331(a and b)	NH	-CHF ₂	-Cl	-H
J332(a and b)	NH	-CHF ₂	-Br	-H
J333(a and b)	NH	-CHF ₂	-F	-H
J334(a and b)	NH	-CHF ₂	-CH ₃	-H
J335(a and b)	NH	-CHF ₂	-CF ₃	-H
J336(a and b)	NH	-CHF ₂	-OCH ₃	-H
J337(a and b)	NH	-CHF ₂	-OCH ₂ CH ₃	-H
J338(a and b)	NH	-CHF ₂	-OCF ₃	-H
J339(a and b)	NH	-CHF ₂	- <i>tert</i> -butyl	-H
J340(a and b)	NH	-CHF ₂	- <i>iso</i> -propyl	-H
J341(a and b)	NH	-CHF ₂	-CH ₃	-CH ₃
J342(a and b)	NH	-CHF ₂	-H	-H

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Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J343(a and b)	NH	-CHF ₂	-H	-Cl
J344(a and b)	NH	-CHF ₂	-H	-Br
J345(a and b)	NH	-CHF ₂	-H	-F
J346(a and b)	NH	-CHF ₂	-H	-CH ₃
J347(a and b)	NH	-CHF ₂	-H	-CF ₃
J348(a and b)	NH	-CHF ₂	-H	-OCH ₃
J349(a and b)	NH	-CHF ₂	-H	-OCH ₂ CH ₃
J350(a and b)	NH	-CHF ₂	-H	-OCF ₃
J351(a and b)	NH	-CHF ₂	-H	- <i>tert</i> -butyl
J352(a and b)	NH	-CHF ₂	-H	- <i>iso</i> -propyl
J353(a and b)	NH	-Br	-Br	-H
J354(a and b)	NH	-Br	-Cl	-H
J355(a and b)	NH	-Br	-F	-H
J356(a and b)	NH	-Br	-CH ₃	-H
J357(a and b)	NH	-Br	-CF ₃	-H
J358(a and b)	NH	-Br	-OCH ₃	-H
J359(a and b)	NH	-Br	-OCH ₂ CH ₃	-H
J360(a and b)	NH	-Br	-OCF ₃	-H
J361(a and b)	NH	-Br	- <i>tert</i> -butyl	-H
J362(a and b)	NH	-Br	- <i>iso</i> -propyl	-H
J363(a and b)	NH	-Br	-CH ₃	-CH ₃
J364(a and b)	NH	-Br	-H	-H
J365(a and b)	NH	-Br	-H	-Cl
J366(a and b)	NH	-Br	-H	-Br
J367(a and b)	NH	-Br	-H	-F
J368(a and b)	NH	-Br	-H	-CH ₃
J369(a and b)	NH	-Br	-H	-CF ₃
J370(a and b)	NH	-Br	-H	-OCH ₃
J371(a and b)	NH	-Br	-H	-OCH ₂ CH ₃
J372(a and b)	NH	-Br	-H	-OCF ₃
J373(a and b)	NH	-Br	-H	- <i>tert</i> -butyl
J374(a and b)	NH	-Br	-H	- <i>iso</i> -propyl
J375(a and b)	NH	-I	-Cl	-H
J376(a and b)	NH	-I	-Br	-H
J377(a and b)	NH	-I	-F	-H
J378(a and b)	NH	-I	-CH ₃	-H
J379(a and b)	NH	-I	-CF ₃	-H
J380(a and b)	NH	-I	-OCH ₃	-H

(continued)

Compound	Y	R ₁	(R ₈) _a	(R ₈) _b
J381(a and b)	NH	-I	-OCH ₂ CH ₃	-H
J382(a and b)	NH	-I	-OCF ₃	-H
J383(a and b)	NH	-I	- <i>tert</i> -butyl	-H
J384(a and b)	NH	-I	- <i>iso</i> -propyl	-H
J385(a and b)	NH	-I	-CH ₃	-CH ₃
J386(a and b)	NH	-I	-H	-H
J387(a and b)	NH	-I	-H	-Cl
J388(a and b)	NH	-I	-H	-Br
J389(a and b)	NH	-I	-H	-F
J390(a and b)	NH	-I	-H	-CH ₃
J391(a and b)	NH	-I	-H	-CF ₃
J392(a and b)	NH	-I	-H	-OCH ₃
J393(a and b)	NH	-I	-H	-OCH ₂ CH ₃
J394(a and b)	NH	-I	-H	-OCF ₃
J395(a and b)	NH	-I	-H	- <i>tert</i> -butyl
J396(a and b)	NH	-I	-H	- <i>iso</i> -propyl

[0328] In the column labeled "Compound":

- (a) means Z₁ is CH and Z₂ is N; and
 (b) means Z₁ is N and Z₂ is CH.

4.4 DEFINITIONS

[0329] As used in connection with the Pyridylene Compounds herein, the terms used above having following meaning:

"-(C₁-C₁₀)alkyl" means a straight chain or branched non-cyclic hydrocarbon having from 1 to 10 carbon atoms. Representative straight chain -(C₁-C₁₀)alkyls include -methyl, -ethyl, -n-propyl, -n-butyl, -n-pentyl, -n-hexyl, -n-heptyl, -n-octyl, -n-nonyl, and -n-decyl. Representative branched -(C₁-C₁₀)alkyls include -*iso*-propyl, -*sec*-butyl, -*iso*-butyl, -*tert*-butyl, -*iso*-pentyl, -neopentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1-ethylbutyl, 2-ethylbutyl, 3-ethylbutyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, 3,3-dimethylbutyl, 1-methylhexyl, 2-methylhexyl, 3-methylhexyl, 4-methylhexyl, 5-methylhexyl, 1,2-dimethylpentyl, 1,3-dimethylpentyl, 1,2-dimethylhexyl, 1,3-dimethylhexyl, 3,3-dimethylhexyl, 1,2-dimethylheptyl, 1,3-dimethylheptyl, and 3,3-dimethylheptyl.

"-(C₁-C₆)alkyl" means a straight chain or branched non-cyclic hydrocarbon having from 1 to 6 carbon atoms. Representative straight chain -(C₁-C₆)alkyls include -methyl, -ethyl, -n-propyl, -n-butyl, -n-pentyl, and -n-hexyl. Representative branched -(C₁-C₆)alkyls include -*iso*-propyl, -*sec*-butyl, -*iso*-butyl, -*tert*-butyl, -*iso*-pentyl, -neopentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl, 4-methylpentyl, 1-ethylbutyl, 2-ethylbutyl, 3-ethylbutyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl, and 3,3-dimethylbutyl.

"-(C₁-C₄)alkyl" means a straight chain or branched non-cyclic hydrocarbon having from 1 to 4 carbon atoms. Representative straight chain -(C₁-C₄)alkyls include -methyl, -ethyl, -n-propyl, and -n-butyl. Representative branched -(C₁-C₄)alkyls include -*iso*-propyl, -*sec*-butyl, -*iso*-butyl, and -*tert*-butyl.

"-(C₂-C₁₀)alkenyl" means a straight chain or branched non-cyclic hydrocarbon having from 2 to 10 carbon atoms and including at least one carbon-carbon double bond. Representative straight chain and branched (C₂-C₁₀)alkenyls include -vinyl, -allyl, -1-butenyl, -2-butenyl, -*iso*-butenyl, -1-pentenyl, -2-pentenyl, -3-methyl-1-butenyl, -2-methyl-2-butenyl, -2,3-dimethyl-2-butenyl, -1-hexenyl, -2-hexenyl, -3-hexenyl, -1-heptenyl, -2-heptenyl, -3-heptenyl, -1-octenyl, -2-octenyl, -3-octenyl, -1-nonenyl, -2-nonenyl, -3-nonenyl, -1-decenyl, -2-decenyl, -3-decenyl and the like.

"-(C₂-C₆)alkenyl" means a straight chain or branched non-cyclic hydrocarbon having from 2 to 6 carbon atoms and including at least one carbon-carbon double bond. Representative straight chain and branched (C₂-C₆)alkenyls include -vinyl, -allyl, -1-butenyl, -2-butenyl, -*iso*-butenyl, -1-pentenyl, -2-pentenyl, -3-methyl-1-butenyl, -2-methyl-2-butenyl, -2,3-dimethyl-2-butenyl, -1-hexenyl, -2-hexenyl, -3-hexenyl and the like.

"-(C₂-C₁₀)alkynyl" means a straight chain or branched non-cyclic hydrocarbon having from 2 to 10 carbon atoms and including at least one carbon-carbon triple bond. Representative straight chain and branched (C₂-C₁₀)alkynyls include -acetylenyl, -propynyl, -1-butyne, -2-butyne, -1-pentyne, -2-pentyne, -3-methyl-1-butyne, -4-pentyne, -1-hexynyl, -2-hexynyl, -5-hexynyl, -1-heptyne, -2-heptyne, -6-heptyne, -1-octynyl, -2-octynyl, -7-octynyl, -1-nonyne, -2-nonyne, -8-nonyne, -1-decynyl, -2-decynyl, -9-decynyl and the like.

"-(C₂-C₆)alkynyl" means a straight chain or branched non-cyclic hydrocarbon having from 2 to 6 carbon atoms and including at least one carbon-carbon triple bond. Representative straight chain and branched (C₂-C₆)alkynyls include -acetylenyl, -propynyl, -1-butyne, -2-butyne, -1-pentyne, -2-pentyne, -3-methyl-1-butyne, -4-pentyne, -1-hexynyl, -2-hexynyl, -5-hexynyl and the like.

"-(C₃-C₁₀)cycloalkyl" means a saturated cyclic hydrocarbon having from 3 to 10 carbon atoms. Representative (C₃-C₁₀)cycloalkyls are -cyclopropyl, -cyclobutyl, -cyclopentyl, -cyclohexyl, -cycloheptyl, -cyclooctyl, -cyclononyl, and -cyclodecyl.

"-(C₃-C₈)cycloalkyl" means a saturated cyclic hydrocarbon having from 3 to 8 carbon atoms. Representative (C₃-C₈)cycloalkyls include -cyclopropyl, -cyclobutyl, -cyclopentyl, -cyclohexyl, -cycloheptyl, and -cyclooctyl.

"-(C₈-C₁₄)bicycloalkyl" means a bi-cyclic hydrocarbon ring system having from 8 to 14 carbon atoms and at least one saturated cyclic alkyl ring. Representative (C₈-C₁₄)bicycloalkyls include -indanyl, -1,2,3,4-tetrahydronaphthyl, -5,6,7,8-tetrahydronaphthyl, -perhydronaphthyl and the like.

"-(C₈-C₁₄)tricycloalkyl" means a tri-cyclic hydrocarbon ring system having from 8 to 14 carbon atoms and at least one saturated cyclic alkyl ring. Representative (C₈-C₁₄)tricycloalkyls include -pyrenyl, -1,2,3,4-tetrahydroanthracenyl, -perhydroanthracenyl, -aceanthrene, -1,2,3,4-tetrahydrophenanthrenyl, -5,6,7,8-tetrahydrophenanthrenyl, -perhydrophenanthrenyl and the like.

"-(C₅-C₁₀)cycloalkenyl" means a cyclic non-aromatic hydrocarbon having at least one carbon-carbon double bond in the cyclic system and from 5 to 10 carbon atoms. Representative (C₅-C₁₀)cycloalkenyls include -cyclopentenyl, -cyclopentadienyl, -cyclohexenyl, -cyclohexadienyl, -cycloheptenyl, -cycloheptadienyl, -cycloheptatrienyl, -cyclooctenyl, -cyclooctadienyl, -cyclooctatrienyl, -cyclooctatetraenyl, -cyclononyl, -cyclononadienyl, -cyclodecenyl, -cyclodecadienyl and the like.

"-(C₅-C₈)cycloalkenyl" means a cyclic non-aromatic hydrocarbon having at least one carbon-carbon double bond in the cyclic system and from 5 to 8 carbon atoms. Representative (C₅-C₈)cycloalkenyls include -cyclopentenyl, -cyclopentadienyl, -cyclohexenyl, -cyclohexadienyl, -cycloheptenyl, -cycloheptadienyl, -cycloheptatrienyl, -cyclooctenyl, -cyclooctadienyl, -cyclooctatrienyl, -cyclooctatetraenyl and the like.

"-(C₈-C₁₄)bicycloalkenyl" means a bi-cyclic hydrocarbon ring system having at least one carbon-carbon double bond in each ring and from 8 to 14 carbon atoms. Representative (C₈-C₁₄)bicycloalkenyls include -indenyl, -pentalenyl, -naphthalenyl, -azulenyl, -heptalenyl, -1,2,7,8-tetrahydronaphthalenyl and the like.

"-(C₈-C₁₄)tricycloalkenyl" means a tri-cyclic hydrocarbon ring system having at least one carbon-carbon double bond in each ring and from 8 to 14 carbon atoms. Representative (C₈-C₁₄)tricycloalkenyls include -anthracenyl, -phenanthrenyl, -phenalenyl, -acenaphthalenyl, -as-indacenyl, -s-indacenyl and the like.

"-(3- to 7-membered)heterocycle" or "-(3- to 7-membered)heterocyclo" means a 3- to 7-membered monocyclic

heterocyclic ring which is either saturated, unsaturated non-aromatic, or aromatic. A 3- or a 4-membered heterocycle can contain up to 3 heteroatoms, a 5-membered heterocycle can contain up to 4 heteroatoms, a 6-membered heterocycle can contain up to 6 heteroatoms, and a 7-membered heterocycle can contain up to 7 heteroatoms. Each heteroatom is independently selected from nitrogen, which can be quaternized; oxygen; and sulfur, including sulfoxide and sulfone. The -(3- to 7-membered)heterocycle can be attached via a nitrogen or carbon atom. Representative (3- to 7-membered)heterocycles include pyridyl, furyl, thiophenyl, pyrrolyl, oxazolyl, imidazolyl, thiazolyl, thiadiazolyl, isoxazolyl, pyrazolyl, isothiazolyl, pyridazinyl, pyrimidinyl, triazinyl, morpholinyl, pyrrolidinonyl, pyrrolidinyl, piperidinyl, piperazinyl, hydantoinyl, valerolactamyl, oxiranyl, oxetanyl, tetrahydrofuranyl, tetrahydropyranyl, tetrahydropyridinyl, tetrahydropyrimidinyl, tetrahydrothiophenyl, tetrahydrothiopyranyl and the like.

"-(3- to 5-membered)heterocycle" or "-(3- to 5-membered)heterocyclo" means a 3- to 5-membered monocyclic heterocyclic ring which is either saturated, unsaturated non-aromatic, or aromatic. A 3- or a 4-membered heterocycle can contain up to 3 heteroatoms, and a 5-membered heterocycle can contain up to 4 heteroatoms. Each heteroatom is independently selected from nitrogen, which can be quaternized; oxygen; and sulfur, including sulfoxide and sulfone. The -(3- to 5-membered)heterocycle can be attached via a nitrogen or carbon atom. Representative -(3- to 5-membered)heterocycles include furyl, thiophenyl, pyrrolyl, oxazolyl, imidazolyl, thiazolyl, isoxazolyl, pyrazolyl, isothiazolyl, triazinyl, pyrrolidinonyl, pyrrolidinyl, hydantoinyl, oxiranyl, oxetanyl, tetrahydrofuranyl, tetrahydrothiophenyl and the like.

"-(7- to 10-membered)bicycloheterocycle" or "-(7- to 10-membered)bicycloheterocyclo" means a 7- to 10-membered bicyclic, heterocyclic ring which is either saturated, unsaturated non-aromatic, or aromatic. A -(7- to 10-membered) bicycloheterocycle contains from 1 to 4 heteroatoms independently selected from nitrogen, which can be quaternized; oxygen; and sulfur, including sulfoxide and sulfone. The -(7- to 10-membered)bicycloheterocycle can be attached via a nitrogen or carbon atom. Representative -(7- to 10-membered)bicycloheterocycles include -quinolinyl, -isoquinolinyl, -chromonyl, -coumarinyl, -indolyl, -indoliziny, -benzo[b]furanyl, -benzo[b]thiophenyl, -indazolyl, -purinyl, -4H-quinoliziny, -isoquinolyl, -quinolyl, -phthalazinyl, -naphthyridinyl, -carbazolyl, - β -carbolinyl and the like.

"-(C₁₄)aryl" means a 14-membered aromatic carbocyclic moiety such as -anthryl or -phenanthryl.

"-(5- to 10-membered)heteroaryl" means an aromatic heterocycle ring of 5 to 10 members, including both mono- and bicyclic ring systems, where at least one carbon atom of one or both of the rings is replaced with a heteroatom independently selected from nitrogen, oxygen, and sulfur. In one embodiment, one of the -(5- to 10-membered) heteroaryl's rings contain at least one carbon atom. In another embodiment, both of the -(5- to 10-membered) heteroaryl's rings contain at least one carbon atom. Representative -(5- to 10-membered)heteroaryls include pyridyl, furyl, benzofuranyl, thiophenyl, benzothiophenyl, quinolinyl, pyrrolyl, indolyl, oxazolyl, benzoxazolyl, imidazolyl, benzimidazolyl, thiazolyl, benzothiazolyl, isoxazolyl, pyrazolyl, isothiazolyl, pyridazinyl, pyrimidyl, pyrimidinyl, thiadiazolyl, triazinyl, cinnolinyl, phthalazinyl, and quinazolinyl.

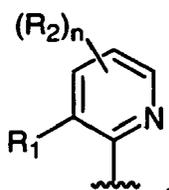
"-CH₂(halo)" means a methyl group where one of the hydrogens of the methyl group has been replaced with a halogen. Representative -CH₂(halo) groups include -CH₂F, -CH₂Cl, -CH₂Br, and -CH₂I.

"-CH(halo)₂" means a methyl group where two of the hydrogens of the methyl group have been replaced with a halogen. Representative -CH(halo)₂ groups include -CHF₂, -CHCl₂, -CHBr₂, -CHBrCl, -CHClI, and -CHI₂.

"-C(halo)₃" means a methyl group where each of the hydrogens of the methyl group has been replaced with a halogen. Representative -C(halo)₃ groups include -CF₃, -CCl₃, -CBr₃, and -Cl₃.

"-Halogen" or "-halo" means -F, -Cl, -Br, or -I.

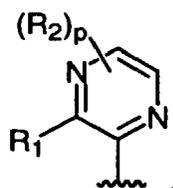
[0330] The phrase "pyridyl group" means



where R_1 , R_2 , and n are defined above for the Pyridylene Compounds of formula (I) and (II).

[0331] The phrase "pyrazinyl group" means,

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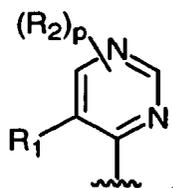


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where R_1 , R_2 , and p are defined above for the Pyridylene Compounds of formula (I) and (II).

[0332] The phrase "pyrimidinyl group" means

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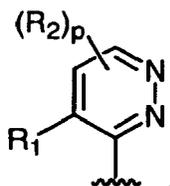


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where R_1 , R_2 , and p are defined above for the Pyridylene Compounds of formula (I) and (II).

[0333] The phrase "pyridazinyl group" means

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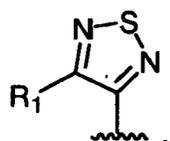


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where R_1 , R_2 , and p are defined above for the Pyridylene Compounds of formula (I) and (II).

[0334] The phrase "thiadiazolyl group" means

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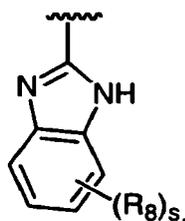


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where R_1 is defined above for the Pyridylene Compounds of formula (I) and (II).

[0335] The phrase "benzimidazolyl group" means

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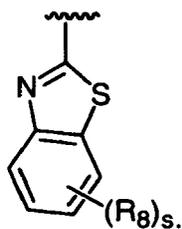


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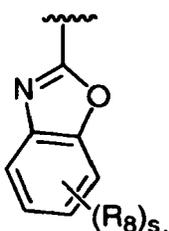
where R_8 and s are defined above for the Pyridylene Compounds of formula (I) and (II).

[0336] The phrase "benzothiazolyl group" means



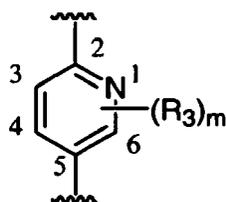
10 where R_8 and s are defined above for the Pyridylene Compounds of formula (I) and (II).

[0337] The phrase "benzoxazolyl group" means



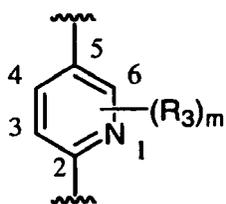
20 where R_8 and s are defined above for the Pyridylene Compounds of formula (I) and (II).

25 [0338] The phrase "pyridylene ring" in connection with the Pyridylene Compounds of formula (I) means



35 where R_3 and m are defined above for the Pyridylene Compounds of formula (I) and (II) and the numbers designate the position of each atom of the pyridylene ring of formula (I).

[0339] The phrase "pyridylene ring" in connection with the Pyridylene Compounds of formula (II) means



45 where R_3 and m are defined above for the Pyridylene Compounds of formula (I) and (II) and the numbers designate the position of each atom of the pyridylene ring of formula (II).

[0340] The term "animal" includes, but is not limited to, a cow, monkey, baboon, chimpanzee, horse, sheep, pig, chicken, turkey, quail, cat, dog, mouse, rat, rabbit, guinea pig, and human.

[0341] The phrase "pharmaceutically acceptable salt," as used herein, is any pharmaceutically acceptable salt that can be prepared from a Pyridylene Compound including a salt formed from an acid and a basic functional group, such as a nitrogen group, of one of the Pyridylene Compounds. Illustrative salts include, but are not limited, to sulfate, citrate, acetate, oxalate, chloride, bromide, iodide, nitrate, bisulfate, phosphate, acid phosphate, isonicotinate, lactate, salicylate, acid citrate, tartrate, oleate, tannate, pantothenate, bitartrate, ascorbate, succinate, maleate, gentisinate, fumarate, gluconate, glucuronate, saccharate, formate, benzoate, glutamate, methanesulfonate, ethanesulfonate, benzenesul-

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fonate, *p*-toluenesulfonate, and pamoate (i.e., 1,1'-methylene-bis-(2-hydroxy-3-naphthoate)) salts. The term "pharmaceutically acceptable salt" also includes a salt prepared from a Pyridylene Compound having an acidic functional group, such as a carboxylic acid functional group, and a pharmaceutically acceptable inorganic or organic base. Suitable bases include, but are not limited to, hydroxides of alkali metals such as sodium, potassium, and lithium; hydroxides of alkaline earth metal such as calcium and magnesium; hydroxides of other metals, such as aluminum and zinc; ammonia and organic amines, such as unsubstituted or hydroxy-substituted mono-, di-, or trialkylamines; dicyclohexylamine; tributyl amine; pyridine; N-methyl,N-ethylamine; diethylamine; triethylamine; mono-, bis-, or tris-(2-hydroxy-lower alkyl amines), such as mono-, bis-, or tris-(2-hydroxyethyl)amine, 2-hydroxy-*tert*-butylamine, or tris-(hydroxymethyl)methylamine, N, N-di-lower alkyl-N-(hydroxy lower alkyl)-amines, such as N,N-dimethyl-N-(2-hydroxyethyl)amine, or tri-(2-hydroxyethyl) amine; N-methyl-D-glucamine; and amino acids such as arginine, lysine and the like.

[0342] The phrase "effective amount," when used in connection with a Pyridylene Compound means an amount effective for: (a) treating or preventing a Condition; or (b) inhibiting VR1, mGluR1, or mGluR5 function in a cell.

[0343] The phrase "effective amount," when used in connection with the another therapeutic agent means an amount for providing the therapeutic effect of the therapeutic agent.

[0344] When a first group is "substituted with one or more" second groups, one or more hydrogen atoms of the first group is replaced with a corresponding number of second groups. When the number of second groups is two or greater, each second group can be the same or different. In one embodiment, the number of second groups is one or two. In another embodiment, the number of second groups is one.

[0345] The term "THF" means tetrahydrofuran.

[0346] The term "DMF" means dimethylformamide.

[0347] The term "HOBt" means 1-hydroxybenzotriazole hydrate.

[0348] The term "EDCI" means 1-ethyl-3-[3-(dimethylamino)propyl]carbodiimide.

[0349] The term "IBD" means inflammatory-bowel disease.

[0350] The term "IBS" means irritable-bowel syndrome.

[0351] The term "ALS" means amyotrophic lateral sclerosis.

[0352] The phrases "treatment of," "treating" and the like include the amelioration or cessation of a Condition or a symptom thereof.

[0353] In one embodiment, treating includes inhibiting, for example, decreasing the overall frequency of episodes of a Condition or a symptom thereof.

[0354] The phrases "prevention of," "preventing" and the like include the avoidance of the onset of a Condition or a symptom thereof.

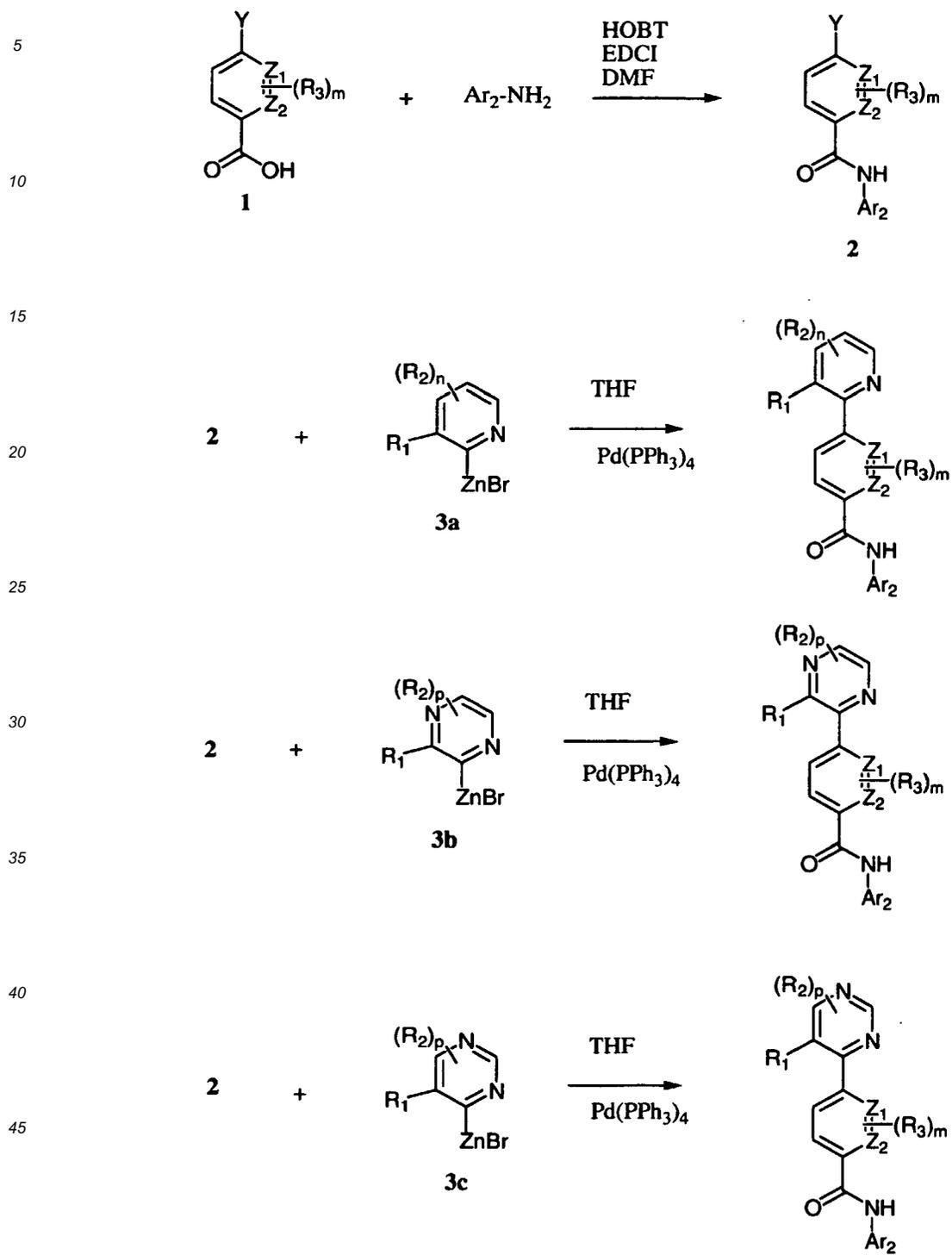
4.5 METHODS FOR MAKING THE PYRIDYLENE COMPOUNDS

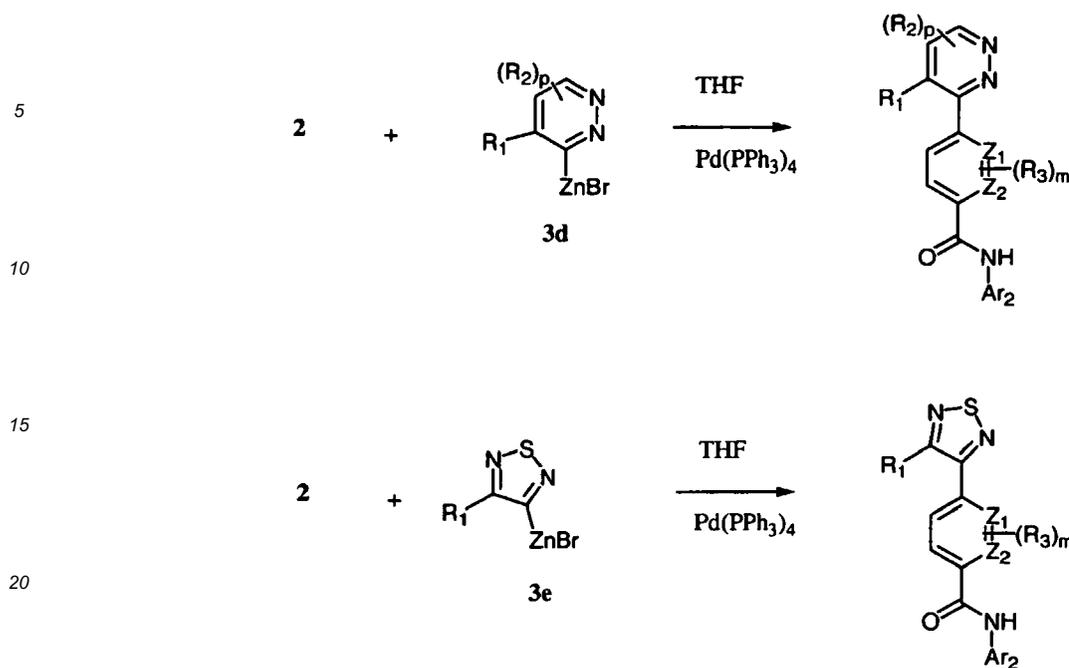
[0355] The Pyridylene Compounds can be made using conventional organic synthesis or by the following illustrative methods shown in the schemes below.

4.5.1 METHODS FOR MAKING THE PYRIDYLENE COMPOUNDS OF FORMULA (I) WHERE X IS O

[0356] The Pyridylene Compounds of formula (I) where X is O can be obtained by the following illustrative method shown below in Scheme 1.

Scheme 1





25 where Ar₂, R₁, R₂, R₃, m, n, and p are defined above; Y is a halogen; and either Z₁ is N and Z₂ is CH or Z₁ is CH and Z₂ is N.
[0357] To a solution of a halogenated benzoic acid **1** in DMF (0.33 M) is added about 1.1 equivalents of amine, Ar₂-NH₂, and the resulting solution is allowed to stir for about 5 min at a temperature of about 25°C. To the resulting solution is then added about 0.5 equivalent of HOBT and about 1 equivalent of EDCI and the resulting mixture is allowed to stir for about 2 h at about 25°C. The reaction mixture is then diluted with about 100 mL 2N aqueous sodium hydroxide and extracted with ethyl acetate (3 extractions, about 100 mL/extraction). The ethyl acetate layers are combined and the ethyl acetate is removed under reduced pressure to provide a compound of formula **2**. The compound of formula **2** is dissolved in DMF (0.04M) and about 3 equivalents of zinc bromide **3a-e** and about 0.05 equivalents of Pd(PPh₃)₄ are added to the suspension under a nitrogen atmosphere. The resulting reaction mixture is allowed to stir for about 2 h at a temperature of about 100°C. The solvent is then removed under reduced pressure to provide a Pyridylene Compound where X is O. The Pyridylene Compound where X is O can be purified by means known to those skilled in the art. Representative methods to purify the Pyridylene Compound where X is O include, but are not limited to column chromatography, preparative thin-layer chromatography, preparative high pressure liquid chromatography (HPLC), and recrystallization.

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[0358] If the compound of formula **2** is substituted with a hydroxyl or amino group, the hydroxyl or amino group is protected using a suitable protecting group before being reacted with zinc bromide **3a-e**. Similarly, if R₂ is a hydroxyl or amino group, the hydroxyl or amino group is protected before forming the zinc bromide reagent. Suitable protecting groups for hydroxyl group include, but are not limited to, methyl ether, methoxymethyl ether, methoxythiomethyl ether, 2-methoxyethoxymethyl ether, bis(2-chloroethoxy)ethyl ether, tetrahydropyranyl ether, tetrahydrothiopyranyl ether, 4-methoxytetrahydropyranyl ether, methoxytetrahydrothiopyranyl ether, tetrahydrofuranyl ether, tetrahydrothiofuranyl ether, 1-ethoxyethyl ether, 1-methyl-1-methoxyethyl ether, 2-(phenylselenyl ether), *tert*-butyl ether, allyl ether, benzyl ether, *o*-nitrobenzyl ether, triphenylmethyl ether, *o*-naphthylidiphenylmethyl ether, *p*-methoxydiphenylmethyl ether, 9-(9-phenyl-10-oxo)anthryl ether (tritylone), trimethylsilyl ether, *iso*-propyldimethylsilyl ether, *tert*-butyldimethylsilyl ether, *tert*-butyldiphenylsilyl ether, tribenzylsilyl ether, tri-*iso*-propylsilyl ether, formate ester, acetate ester, trichloroacetate ester, phenoxyacetate ester, *iso*-butyrate ester, pivaloate ester, adamantoate ester, benzoate ester, 2,4,6-trimethyl (mesitoate) ester, methyl carbonate, 2,2,2-trichlorocarbonate, allyl carbonate, *p*-nitrophenyl carbonate, benzyl carbonate, *p*-nitrobenzyl carbonate, S-benzylthiocarbonate, N-phenylcarbamate, nitrate ester, and 2,4-dinitrophenylsulfenate ester (See, e.g., T.W. Greene, Protective Groups in Organic Synthesis, John Wiley-Interscience Publication, New York, (1981)). Suitable protecting groups for an amino group include, but are not limited to, 1,1-dimethyl-2,2,2-trichloroethyl carbamate, 1-methyl-1-(4-biphenyl)ethyl carbamate, 2-trimethylsilylethyl carbamate, 9-fluorenylmethyl carbamate, and *tert*-butyl carbamate (T.W. Greene et al., Protective Groups in Organic Synthesis, 309-405 (2d ed. 1991)).

[0359] The halo acids **1** and the amines of formula Ar₂NH₂ are commercially available or can be prepared by methods known to those skilled in the art. Compounds of formula **3a-e** can be prepared by methods known to those skilled in the art (See M.B. Smith and J. March, March's Advanced Organic Chemistry: Reaction Mechanisms and Structure, 805-807

(5th ed. 2001); H. Fillon et al., *Tett. Lett.* 42:3843-46 (2001); M. Amadji et al., *Tetrahedron* 9:1657-60 (1998); and S. Billotte, *Synlett.* 379-380 (1998)).

4.5.2 METHODS FOR MAKING THE PYRIDYLENE COMPOUNDS WHERE X IS S

[0360] The Pyridylene Compounds where X is S can be obtained by reacting a Pyridylene Compound where X is O, prepared as described above in section 4.5.1, with Lawesson's reagent at a temperature of about 100°C. (See, e.g., J. March, *Advanced Organic Chemistry, Reactions, Mechanisms, and Structure*, 891-892 (4th ed. 1992)).

4.6 THERAPEUTIC USES OF THE PYRIDYLENE COMPOUNDS

[0361] In accordance with the invention, the Pyridylene Compounds are administered to an animal in need of treatment or prevention of a Condition.

[0362] In one embodiment, an effective amount of a Pyridylene Compound can be used to treat or prevent any condition treatable or preventable by inhibiting VR1. Examples of conditions that are treatable or preventable by inhibiting VR1 include, but are not limited to, pain, UI, an ulcer, IBD, and IBS.

[0363] In another embodiment, an effective amount of a Pyridylene Compound can be used to treat or prevent any condition treatable or preventable by inhibiting mGluR5. Examples of conditions that are treatable or preventable by inhibiting mGluR5 include, but are not limited to, pain, an addictive disorder, Parkinson's disease, parkinsonism, anxiety, a pruritic condition, and psychosis.

[0364] In another embodiment, an effective amount of a Pyridylene Compound can be used to treat or prevent any condition treatable or preventable by inhibiting mGluR1. Examples of conditions that are treatable or preventable by inhibiting mGluR1 include, but are not limited to, pain, UI, an addictive disorder, Parkinson's disease, parkinsonism, anxiety, epilepsy, stroke, a seizure, a pruritic condition, psychosis, a cognitive disorder, a memory deficit, restricted brain function, Huntington's chorea, ALS, dementia, retinopathy, a muscle spasm, a migraine, vomiting, dyskinesia, and depression.

[0365] The Pyridylene Compounds can be used to treat or prevent acute or chronic pain. Examples of pain treatable or preventable using the Pyridylene Compounds include, but are not limited to, cancer pain, labor pain, myocardial infarction pain, pancreatic pain, colic pain, post-operative pain, headache pain, muscle pain, arthritic pain, and pain associated with a periodontal disease, including gingivitis and periodontitis.

[0366] The Pyridylene Compounds can also be used for treating or preventing pain associated with inflammation or with an inflammatory disease in an animal. Such pain can arise where there is an inflammation of the body tissue which can be a local inflammatory response and/or a systemic inflammation. For example, the Pyridylene Compounds can be used to treat or prevent pain associated with inflammatory diseases including, but not limited to: organ transplant rejection; reoxygenation injury resulting from organ transplantation (see Grupp et al., *J. Mol. Cell Cardiol.* 31:297-303 (1999)) including, but not limited to, transplantation of the heart, lung, liver, or kidney; chronic inflammatory diseases of the joints, including arthritis, rheumatoid arthritis, osteoarthritis and bone diseases associated with increased bone resorption; inflammatory bowel diseases, such as ileitis, ulcerative colitis, Barrett's syndrome, and Crohn's disease; inflammatory lung diseases, such as asthma, adult respiratory distress syndrome, and chronic obstructive airway disease; inflammatory diseases of the eye, including corneal dystrophy, trachoma, onchocerciasis, uveitis, sympathetic ophthalmitis and endophthalmitis; chronic inflammatory disease of the gum, including gingivitis and periodontitis; tuberculosis; leprosy; inflammatory diseases of the kidney, including uremic complications, glomerulonephritis and nephrosis; inflammatory disease of the skin, including sclerodermatitis, psoriasis and eczema; inflammatory diseases of the central nervous system, including chronic demyelinating diseases of the nervous system, multiple sclerosis, AIDS-related neurodegeneration and Alzheimer's disease, infectious meningitis, encephalomyelitis, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis and viral or autoimmune encephalitis; autoimmune diseases, including Type I and Type II diabetes mellitus; diabetic complications, including, but not limited to, diabetic cataract, glaucoma, retinopathy, nephropathy (such as microalbuminuria and progressive diabetic nephropathy), polyneuropathy, mononeuropathies, autonomic neuropathy, gangrene of the feet, atherosclerotic coronary arterial disease, peripheral arterial disease, nonketotic hyperglycemic-hyperosmolar coma, foot ulcers, joint problems, and a skin or mucous membrane complication (such as an infection, a shin spot, a candidal infection or necrobiosis lipoidica diabetorum); immune-complex vasculitis, and systemic lupus erythematosus (SLE); inflammatory disease of the heart, such as cardiomyopathy, ischemic heart disease hypercholesterolemia, and arteriosclerosis; as well as various other diseases that can have significant inflammatory components, including preeclampsia, chronic liver failure, brain and spinal cord trauma, and cancer. The Pyridylene Compounds can also be used for treating or preventing pain associated with inflammatory disease that can, for example, be a systemic inflammation of the body, exemplified by gram-positive or gram negative shock, hemorrhagic or anaphylactic shock, or shock induced by cancer chemotherapy in response to pro-inflammatory cytokines, e.g., shock associated with pro-inflammatory cytokines. Such shock can be induced, e.g., by a chemotherapeutic agent that is administered

as a treatment for cancer.

[0367] The Pyridylene Compounds can be used to treat or prevent UI. Examples of UI treatable or preventable using the Pyridylene Compounds include, but are not limited to, urge incontinence, stress incontinence, overflow incontinence, neurogenic incontinence, and total incontinence.

[0368] The Pyridylene Compounds can be used to treat or prevent an ulcer. Examples of ulcers treatable or preventable using the Pyridylene Compounds include, but are not limited to, a duodenal ulcer, a gastric ulcer, a marginal ulcer, an esophageal ulcer, and a stress ulcer.

[0369] The Pyridylene Compounds can be used to treat or prevent IBD, including Crohn's disease and ulcerative colitis.

[0370] The Pyridylene Compounds can be used to treat or prevent IBS. Examples of IBS treatable or preventable using the Pyridylene Compounds include, but are not limited to, spastic-colon-type IBS and constipation-predominant IBS.

[0371] The Pyridylene Compounds can be used to treat or prevent an addictive disorder, including but not limited to, an eating disorder, an impulse-control disorder, an alcohol-related disorder, a nicotine-related disorder, an amphetamine-related disorder, a cannabis-related disorder, a cocaine-related disorder, an hallucinogen-related disorder, an inhalant-related disorders, and an opioid-related disorder, all of which are further subclassified as listed below.

[0372] Eating disorders include, but are not limited to, Bulimia Nervosa, Nonpurging Type; Bulimia Nervosa, Purging Type; Anorexia; and Eating Disorder not otherwise specified (NOS).

[0373] Impulse control disorders include, but are not limited to, Intermittent Explosive Disorder, Kleptomania, Pyromania, Pathological Gambling, Trichotillomania, and Impulse Control Disorder not otherwise specified (NOS).

[0374] Alcohol-related disorders include, but are not limited to, Alcohol-Induced Psychotic Disorder with delusions, Alcohol Abuse, Alcohol Intoxication, Alcohol Withdrawal, Alcohol Intoxication Delirium, Alcohol Withdrawal Delirium, Alcohol-Induced Persisting Dementia, Alcohol-Induced Persisting Amnesic Disorder, Alcohol Dependence, Alcohol-Induced Psychotic Disorder with hallucinations, Alcohol-Induced Mood Disorder, Alcohol-Induced Anxiety Disorder, Alcohol-Induced Sexual Dysfunction, Alcohol-Induced Sleep Disorder, and Alcohol-Related Disorder not otherwise specified (NOS).

[0375] Nicotine-related disorders include, but are not limited to, Nicotine Dependence, Nicotine Withdrawal, and Nicotine-Related Disorder not otherwise specified (NOS).

[0376] Amphetamine-related disorders include, but are not limited to, Amphetamine Dependence, Amphetamine Abuse, Amphetamine Intoxication, Amphetamine Withdrawal, Amphetamine Intoxication Delirium, Amphetamine-Induced Psychotic Disorder with delusions, Amphetamine-Induced Psychotic Disorders with hallucinations, Amphetamine-Induced Mood Disorder, Amphetamine-Induced Anxiety Disorder, Amphetamine-Induced Sexual Dysfunction, Amphetamine-Induced Sleep Disorder, and Amphetamine Related Disorder not otherwise specified (NOS).

[0377] Cannabis-related disorders include, but are not limited to, Cannabis Dependence, Cannabis Abuse, Cannabis Intoxication, Cannabis Intoxication Delirium, Cannabis-Induced Psychotic Disorder with delusions, Cannabis-Induced Psychotic Disorder with hallucinations, Cannabis-Induced Anxiety Disorder, and Cannabis Related Disorder not otherwise specified (NOS).

[0378] Cocaine-related disorders include, but are not limited to, Cocaine Dependence, Cocaine Abuse, Cocaine Intoxication, Cocaine Withdrawal, Cocaine Intoxication Delirium, Cocaine-Induced Psychotic Disorder with delusions, Cocaine-Induced Psychotic Disorders with hallucinations, Cocaine-Induced Mood Disorder, Cocaine-Induced Anxiety Disorder, Cocaine-Induced Sexual Dysfunction, Cocaine-Induced Sleep Disorder, and Cocaine Related Disorder not otherwise specified (NOS).

[0379] Hallucinogen-related disorders include, but are not limited to, Hallucinogen Dependence, Hallucinogen Abuse, Hallucinogen Intoxication, Hallucinogen Withdrawal, Hallucinogen Intoxication Delirium, Hallucinogen Persisting Perception Disorder (Flashbacks), Hallucinogen-Induced Psychotic Disorder with delusions, Hallucinogen-Induced Psychotic Disorders with hallucinations, Hallucinogen-Induced Mood Disorder, Hallucinogen-Induced Anxiety Disorder, Hallucinogen-Induced Sexual Dysfunction, Hallucinogen-Induced Sleep Disorder, Hallucinogen Related Disorder not otherwise specified (NOS).

[0380] Inhalant-related disorders include, but are not limited to, Inhalant Dependence, Inhalant Abuse, Inhalant Intoxication, Inhalant Intoxication Delirium, Inhalant-Induced Psychotic Disorder with delusions, Inhalant-Induced Psychotic Disorder with hallucinations, Inhalant-Induced Anxiety Disorder, and Inhalant Related Disorder not otherwise specified (NOS).

[0381] Opioid-related disorders include, but are not limited to, Opioid Dependence, Opioid Abuse, Opioid Withdrawal, Opioid Intoxication, Opioid Intoxication Delirium, Opioid-Induced Psychotic Disorder with delusions, Opioid-Induced Psychotic Disorder with hallucinations, Opioid-Induced Anxiety Disorder, and Opioid Related Disorder not otherwise specified (NOS).

[0382] The Pyridylene Compounds can be used to treat or prevent Parkinson's disease and parkinsonism and the symptoms associated with Parkinson's disease and parkinsonism, including but not limited to, bradykinesia, muscular rigidity, resting tremor, and impairment of postural balance.

[0383] The Pyridylene Compounds can be used to treat or prevent generalized anxiety or severe anxiety and the

symptoms associated with anxiety, including but not limited to, restlessness; tension; tachycardia; dyspnea; depression, including chronic "neurotic" depression; panic disorder; agoraphobia and other specific phobias; eating disorders; and personality disorders.

5 [0384] The Pyridylene Compounds can be used to treat or prevent epilepsy, including but not limited to, partial epilepsy, generalized epilepsy, and the symptoms associated with epilepsy, including but not limited to, simple partial seizures, jacksonian seizures, complex partial (psychomotor) seizures, convulsive seizures (grand mal or tonic-clonic seizures), petit mal (absence) seizures, and status epilepticus.

[0385] The Pyridylene Compounds can be used to treat or prevent strokes, including but not limited to, ischemic strokes and hemorrhagic strokes.

10 [0386] The Pyridylene Compounds can be used to treat or prevent a seizure, including but not limited to, infantile spasms, febrile seizures, and epileptic seizures.

[0387] The Pyridylene Compounds can be used to treat or prevent a pruritic condition, including but not limited to, pruritus caused by dry skin, scabies, dermatitis, herpetiformis, atopic dermatitis, *pruritus vulvae et ani*, miliaria, insect bites, pediculosis, contact dermatitis, drug reactions, urticaria, urticarial eruptions of pregnancy, psoriasis, lichen planus, lichen simplex chronicus, exfoliative dermatitis, folliculitis, bullous pemphigoid, or fiberglass dermatitis.

15 [0388] The Pyridylene Compounds can be used to treat or prevent psychosis, including but not limited to, schizophrenia, including paranoid schizophrenia, hebephrenic or disorganized schizophrenia, catatonic schizophrenia, undifferentiated schizophrenia, negative or deficit subtype schizophrenia, and non-deficit schizophrenia; a delusional disorder, including erotomanic subtype delusional disorder, grandiose subtype delusional disorder, jealous subtype delusional disorder, persecutory subtype delusional disorder, and somatic subtype delusional disorder; and brief psychosis.

20 [0389] The Pyridylene Compounds can be used to treat or prevent a cognitive disorder, including but not limited to, delirium and dementia such as multi-infarct dementia, dementia pugilistica, dementia caused by AIDS, and dementia caused by Alzheimer's disease.

[0390] The Pyridylene Compounds can be used to treat or prevent a memory deficiency, including but not limited to, dissociative amnesia and dissociative fugue.

25 [0391] The Pyridylene Compounds can be used to treat or prevent restricted brain function, including but not limited to, that caused by surgery or an organ transplant, restricted blood supply to the brain, a spinal cord injury, a head injury, hypoxia, cardiac arrest, or hypoglycemia.

[0392] The Pyridylene Compounds can be used to treat or prevent Huntington's chorea.

30 [0393] The Pyridylene Compounds can be used to treat or prevent ALS.

[0394] The Pyridylene Compounds can be used to treat or prevent retinopathy, including but not limited to, arterio-sclerotic retinopathy, diabetic arteriosclerotic retinopathy, hypertensive retinopathy, non-proliferative retinopathy, and proliferative retinopathy.

[0395] The Pyridylene Compounds can be used to treat or prevent a muscle spasm.

35 [0396] The Pyridylene Compounds can be used to treat or prevent a migraine including, but not limited to, migraine without aura ("common migraine"), migraine with aura ("classic migraine"), migraine without headache, basilar migraine, familial hemiplegic migraine, migrainous infarction, and migraine with prolonged aura.

[0397] The Pyridylene Compounds can be used to treat or prevent vomiting, including but not limited to, nausea vomiting, dry vomiting (retching), and regurgitation.

40 [0398] The Pyridylene Compounds can be used to treat or prevent dyskinesia, including but not limited to, tardive dyskinesia and biliary dyskinesia.

[0399] The Pyridylene Compounds can be used to treat or prevent depression, including but not limited to, major depression and bipolar disorder.

[0400] Applicants believe that the Pyridylene Compounds are antagonists for VR1.

45 [0401] The invention also relates to methods for inhibiting VR1 function in a cell, comprising contacting a cell capable of expressing VR1 with an amount of a Pyridylene Compound effective to inhibit VR1 function in a cell. This method can be used *in vitro*, for example, as an assay to select cells that express VR1 and, accordingly, are useful as part of an assay to select compounds useful for treating or preventing pain, UI, an ulcer, IBD, or IBS. The method is also useful for inhibiting VR1 function in a cell *in vivo*, in an animal (*e.g.*, a human), by contacting a cell of the animal with an effective amount of a Pyridylene Compound. In one embodiment, the method is useful for treating or preventing pain in an animal in need thereof. In another embodiment, the method is useful for treating or preventing UI in an animal in need thereof. In another embodiment, the method is useful for treating or preventing an ulcer in an animal in need thereof. In another embodiment, the method is useful for treating or preventing IBD in an animal in need thereof. In another embodiment, the method is useful for treating or preventing IBS in an animal in need thereof.

50 [0402] Examples of tissue comprising cells capable of expressing VR1 include, but are not limited to, neuronal, brain, kidney, urothelium, and bladder tissue. Methods for assaying cells that express VR1 are known in the art.

[0403] Applicants believe that the Pyridylene Compounds are antagonists for mGluR5.

55 [0404] The invention further relates to methods for inhibiting mGluR5 function in a cell, comprising contacting a cell

capable of expressing mGluR5 with an amount of a Pyridylene Compound effective to inhibit mGluR5 function in the cell. This method can be used *in vitro*, for example, as an assay to select cells that express mGluR5 and, accordingly, are useful as part of an assay to select compounds useful for treating or preventing pain, an addictive disorder, Parkinson's disease, parkinsonism, anxiety, a pruritic condition, or psychosis. The method is also useful for inhibiting mGluR5 function in a cell *in vivo*, in an animal (e.g., a human), by contacting a cell, in an animal, with an amount of a Pyridylene Compound effective to inhibit mGluR5 function in the cell. In one embodiment, the method is useful for treating or preventing pain in an animal in need thereof. In another embodiment, the method is useful for treating or preventing an addictive disorder in an animal in need thereof. In another embodiment, the method is useful for treating or preventing Parkinson's disease in an animal in need thereof. In another embodiment, the method is useful for treating or preventing parkinsonism in an animal in need thereof. In another embodiment, the method is useful for treating or preventing anxiety in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a pruritic condition in an animal in need thereof. In another embodiment, the method is useful for treating or preventing psychosis in an animal in need thereof.

[0405] Examples of cells capable of expressing mGluR5 are neuronal and glial cells of the central nervous system, particularly the brain, especially in the nucleus accumbens. Methods for assaying cells that express mGluR5 are known in the art.

[0406] Applicants believe that the Pyridylene Compounds are antagonists for mGluR1.

[0407] The invention also relates to methods for inhibiting mGluR1 function in a cell, comprising contacting a cell capable of expressing mGluR1 with an amount of a Pyridylene Compound effective to inhibit mGluR1 function in the cell. This method can be used *in vitro*, for example, as an assay to select cells that express mGluR1 and, accordingly, are useful as part of an assay to select compounds useful for treating or preventing pain, UI, an addictive disorder, Parkinson's disease, parkinsonism, anxiety, epilepsy, stroke, a seizure, a pruritic condition, psychosis, a cognitive disorder, a memory deficit, restricted brain function, Huntington's chorea, ALS, dementia, retinopathy, a muscle spasm, a migraine, vomiting, dyskinesia, or depression. The method is also useful for inhibiting mGluR1 function in a cell *in vivo*, in an animal (e.g., a human), by contacting a cell in an animal with an effective amount of a Pyridylene Compound. In one embodiment, the method is useful for treating or preventing pain in an animal in need thereof. In another embodiment, the method is useful for treating or preventing UI in an animal in need thereof. In another embodiment, the method is useful for treating or preventing an addictive disorder in an animal in need thereof. In another embodiment, the method is useful for treating or preventing Parkinson's disease in an animal in need thereof. In another embodiment, the method is useful for treating or preventing parkinsonism in an animal in need thereof. In another embodiment, the method is useful for treating or preventing anxiety in an animal in need thereof. In another embodiment, the method is useful for treating or preventing epilepsy in an animal in need thereof. In another embodiment, the method is useful for treating or preventing stroke in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a seizure in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a pruritic condition in an animal in need thereof. In another embodiment, the method is useful for treating or preventing psychosis in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a cognitive disorder in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a memory deficit in an animal in need thereof. In another embodiment, the method is useful for treating or preventing restricted brain function in an animal in need thereof. In another embodiment, the method is useful for treating or preventing Huntington's chorea in an animal in need thereof. In another embodiment, the method is useful for treating or preventing ALS in an animal in need thereof. In another embodiment, the method is useful for treating or preventing dementia in an animal in need thereof. In another embodiment, the method is useful for treating or preventing retinopathy in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a muscle spasm in an animal in need thereof. In another embodiment, the method is useful for treating or preventing a migraine in an animal in need thereof. In another embodiment, the method is useful for treating or preventing vomiting in an animal in need thereof. In another embodiment, the method is useful for treating or preventing dyskinesia in an animal in need thereof. In another embodiment, the method is useful for treating or preventing depression in an animal in need thereof.

[0408] Examples of cells capable of expressing mGluR1 include, but are not limited to, cerebellar Purkinje neuron cells, Purkinje cell bodies (punctate), cells of spine(s) of the cerebellum; neurons and neurophil cells of olfactory-bulb glomeruli; cells of the superficial layer of the cerebral cortex; hippocampus cells; thalamus cells; superior colliculus cells; and spinal trigeminal nucleus cells. Methods for assaying cells that express mGluR1 are known in the art.

4.7 THERAPEUTIC/PROPHYLACTIC ADMINISTRATION AND COMPOSITIONS OF THE INVENTION

[0409] Due to their activity, the Pyridylene Compounds are advantageously useful in veterinary and human medicine. As described above, the Pyridylene Compounds are useful for treating or preventing a Condition in an animal in need thereof. The pyridylene compounds can thus be used in the manufacture of a medicament for treating a Condition in an animal in need thereof.

[0410] When administered to an animal, the Pyridylene Compounds are administered as a component of a composition that comprises a pharmaceutically acceptable carrier or excipient. The present compositions, which comprise a Pyridylene Compound, can be administered orally. The Pyridylene Compounds of the invention can also be administered by any other convenient route, for example, by infusion or bolus injection, by absorption through epithelial or mucocutaneous linings (e.g., oral, rectal, and intestinal mucosa, etc.) and can be administered together with another therapeutically active agent. Administration can be systemic or local. Various delivery systems are known, e.g., encapsulation in liposomes, microparticles, microcapsules, capsules, etc., and can be used to administer the Pyridylene Compound.

[0411] Methods of administration include, but are not limited to, intradermal, intramuscular, intraperitoneal, intravenous, subcutaneous, intranasal, epidural, oral, sublingual, intracerebral, intravaginal, transdermal, rectal, by inhalation, or topical, particularly to the ears, nose, eyes, or skin. The mode of administration is left to the discretion of the practitioner. In most instances, administration will result in the release of the Pyridylene Compounds into the bloodstream.

[0412] In specific embodiments, it can be desirable to administer the Pyridylene Compounds locally. This can be achieved, for example, and not by way of limitation, by local infusion during surgery, topical application, e.g., in conjunction with a wound dressing after surgery, by injection, by means of a catheter, by means of a suppository or enema, or by means of an implant, said implant being of a porous, non-porous, or gelatinous material, including membranes, such as sialastic membranes, or fibers.

[0413] In certain embodiments, it can be desirable to introduce the Pyridylene Compounds into the central nervous system or gastrointestinal tract by any suitable route, including intraventricular, intrathecal, and epidural injection, and enema. Intraventricular injection can be facilitated by an intraventricular catheter, for example, attached to a reservoir, such as an Ommaya reservoir.

[0414] Pulmonary administration can also be employed, e.g., by use of an inhaler or nebulizer, and formulation with an aerosolizing agent, or via perfusion in a fluorocarbon or synthetic pulmonary surfactant. In certain embodiments, the Pyridylene Compounds can be formulated as a suppository, with traditional binders and excipients such as triglycerides.

[0415] In another embodiment, the Pyridylene Compounds can be delivered in a vesicle, in particular a liposome (see Langer, *Science* 249:1527-1533 (1990); and Treat et al., *Liposomes in the Therapy of Infectious Disease and Cancer* 317-327 and 353-365 (1989)).

[0416] In yet another embodiment, the Pyridylene Compounds can be delivered in a controlled-release system or sustained-release system (see, e.g., Goodson, in *Medical Applications of Controlled Release*, supra, vol. 2, pp. 115-138 (1984)). Other controlled- or sustained-release systems discussed in the review by Langer, *Science* 249:1527-1533 (1990) can be used. In one embodiment, a pump can be used (Langer, *Science* 249:1527-1533 (1990); Sefton, *CRC Crit. Ref. Biomed. Eng.* 14:201 (1987); Buchwald et al., *Surgery* 88:507 (1980); and Saudek et al., *N. Engl. J. Med.* 321:574 (1989)). In another embodiment, polymeric materials can be used (see *Medical Applications of Controlled Release* (Langer and Wise eds., 1974); *Controlled Drug Bioavailability, Drug Product Design and Performance* (Smolen and Ball eds., 1984); Ranger and Peppas, *J. Macromol. Sci. Rev. Macromol. Chem.* 23:61 (1983); Levy et al., *Science* 228:190 (1985); During et al., *Ann. Neurol.* 25:351 (1989); and Howard et al., *J. Neurosurg.* 71:105 (1989)). In yet another embodiment, a controlled- or sustained-release system can be placed in proximity of a target of the Pyridylene Compounds, e.g., the spinal column, brain, or gastrointestinal tract, thus requiring only a fraction of the systemic dose.

[0417] The present compositions can optionally comprise a suitable amount of a pharmaceutically acceptable excipient so as to provide the form for proper administration to the animal. Such a pharmaceutical excipient can be a liquid, such as water or an oil, including those of petroleum, animal, vegetable, or synthetic origin, such as peanut oil, soybean oil, mineral oil, sesame oil and the like. The pharmaceutical excipient can be saline, gum acacia, gelatin, starch paste, talc, keratin, colloidal silica, urea and the like. In addition, auxiliary, stabilizing, thickening, lubricating, and coloring agents can be used. In one embodiment, the pharmaceutically acceptable excipient is sterile when administered to an animal. Water is a particularly useful excipient when the Pyridylene Compound is administered intravenously. Saline solutions and aqueous dextrose and glycerol solutions can also be employed as liquid excipients, particularly for injectable solutions. Suitable pharmaceutical excipients also include starch, glucose, lactose, sucrose, gelatin, malt, rice, flour, chalk, silica gel, sodium stearate, glycerol monostearate, talc, sodium chloride, dried skim milk, glycerol, propylene, glycol, water, ethanol and the like. The present compositions, if desired, can also contain minor amounts of wetting or emulsifying agents, or pH buffering agents.

[0418] The present compositions can take the form of solutions, suspensions, emulsions, tablets, pills, pellets, capsules, capsules containing liquids, powders, sustained-release formulations, suppositories, emulsions, aerosols, sprays, suspensions, or any other form suitable for use. In one embodiment, the composition is in the form of a capsule (see, e.g., U.S. Patent No. 5,698,155). Other examples of suitable pharmaceutical excipients are described in *Remington's Pharmaceutical Sciences* 1447-1676 (Alfonso R. Gennaro ed., 19th ed. 1995), incorporated herein by reference.

[0419] In one embodiment, the Pyridylene Compounds are formulated in accordance with routine procedures as a composition adapted for oral administration to human beings. Compositions for oral delivery can be in the form of tablets, lozenges, aqueous or oily suspensions, granules, powders, emulsions, capsules, syrups, or elixirs, for example. Orally administered compositions can contain one or more agents, for example, sweetening agents such as fructose, aspartame

or saccharin; flavoring agents such as peppermint, oil of wintergreen, or cherry; coloring agents; and preserving agents, to provide a pharmaceutically palatable preparation. Moreover, where in tablet or pill form, the compositions can be coated to delay disintegration and absorption in the gastrointestinal tract thereby providing a sustained action over an extended period of time. Selectively permeable membranes surrounding an osmotically active driving compound are also suitable for orally administered compositions. In these latter platforms, fluid from the environment surrounding the capsule is imbibed by the driving compound, which swells to displace the agent or agent composition through an aperture. These delivery platforms can provide an essentially zero order delivery profile as opposed to the spiked profiles of immediate release formulations. A time-delay material such as glycerol monostearate or glycerol stearate can also be used. Oral compositions can include standard excipients such as mannitol, lactose, starch, magnesium stearate, sodium saccharin, cellulose, and magnesium carbonate. In one embodiment, the excipients are of pharmaceutical grade.

[0420] In another embodiment, the Pyridylene Compounds can be formulated for intravenous administration. Typically, compositions for intravenous administration comprise sterile isotonic aqueous buffer. Where necessary, the compositions can also include a solubilizing agent. Compositions for intravenous administration can optionally include a local anesthetic such as lidocaine to lessen pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampule or sachette indicating the quantity of active agent. Where the Pyridylene Compounds are to be administered by infusion, they can be dispensed, for example, with an infusion bottle containing sterile pharmaceutical grade water or saline. Where the Pyridylene Compounds are administered by injection, an ampule of sterile water for injection or saline can be provided so that the ingredients can be mixed prior to administration.

[0421] The Pyridylene Compounds can be administered by controlled-release or sustained-release means or by delivery devices that are known to those in the art. Examples include, but are not limited to, those described in U.S. Patent Nos.: 3,845,770; 3,916,899; 3,536,809; 3,598,123; 4,008,719; 5,674,533; 5,059,595; 5,591,767; 5,120,548; 5,073,543; 5,639,476; 5,354,556; and 5,733,566, each of which is incorporated herein by reference. Such dosage forms can be used to provide controlled- or sustained-release of one or more active ingredients using, for example, hydropropylmethyl cellulose, other polymer matrices, gels, permeable membranes, osmotic systems, multilayer coatings, micro-particles, liposomes, microspheres, or a combination thereof to provide the desired release profile in varying proportions. Suitable controlled- or sustained-release formulations known to those in the art, including those described herein, can be readily selected for use with the active ingredients of the invention. The invention thus encompasses single unit dosage forms suitable for oral administration such as, but not limited to, tablets, capsules, gelcaps, and caplets that are adapted for controlled- or sustained-release.

[0422] Controlled- or sustained-release pharmaceutical compositions can have a common goal of improving drug therapy over that achieved by their non-controlled or non-sustained-release counterparts. In one embodiment, a controlled- or sustained-release composition comprises a minimal amount of a Pyridylene Compound to treat or prevent the Condition or a symptom thereof in a minimum amount of time. Advantages of controlled- or sustained-release compositions include extended activity of the drug, reduced dosage frequency, and increased patient compliance. In addition, controlled- or sustained-release compositions can favorably affect the time of onset of action or other characteristics, such as blood levels of the Pyridylene Compound, and can thus reduce the occurrence of adverse side effects.

[0423] Controlled- or sustained-release compositions can initially release an amount of a Pyridylene Compound that promptly produces the desired therapeutic or prophylactic effect, and gradually and continually release other amounts of the Pyridylene Compound to maintain this level of therapeutic or prophylactic effect over an extended period of time. To maintain a constant level of the Pyridylene Compound in the body, the Pyridylene Compound can be released from the dosage form at a rate that will replace the amount of Pyridylene Compound being metabolized and excreted from the body. Controlled- or sustained-release of an active ingredient can be stimulated by various conditions, including but not limited to, changes in pH, changes in temperature, concentration or availability of enzymes, concentration or availability of water, or other physiological conditions or compounds.

[0424] The amount of the Pyridylene Compound that is effective for the treatment or prevention of a condition can be determined by standard clinical techniques. In addition, *in vitro* or *in vivo* assays can optionally be employed to help identify optimal dosage ranges. The precise dose to be employed will also depend on the route of administration, and the seriousness of the Condition and can be decided according to the judgment of a practitioner and/or each animal's circumstances. Suitable effective dosage amounts, however, range from about 0.01 mg/kg of body weight to about 2500 mg/kg of body weight, although they are typically about 100 mg/kg of body weight or less. In one embodiment, the effective dosage amount ranges from about 0.01 mg/kg of body weight to about 100 mg/kg of body weight of a Pyridylene Compound, in another embodiment, about 0.02 mg/kg of body weight to about 50 mg/kg of body weight, and in another embodiment, about 0.025 mg/kg of body weight to about 20 mg/kg of body weight. In one embodiment, an effective dosage amount is administered about every 24 h until the Condition is abated. In another embodiment, an effective dosage amount is administered about every 12 h until the Condition is abated. In another embodiment, an effective dosage amount is administered about every 8 h until the Condition is abated. In another embodiment, an effective dosage amount is administered about every 6 h until the Condition is abated. In another embodiment, an effective

dosage amount is administered about every 4 h until the Condition is abated. The effective dosage amounts described herein refer to total amounts administered; that is, if more than one Pryidylene Compound is administered, the effective dosage amounts correspond to the total amount administered.

5 [0425] Where a cell capable of expressing VR1, mGluR5, or mGluR1 is contacted with a Pryidylene Compound *in vitro*, the amount effective for inhibiting the VR1, mGluR5, or mGluR1 receptor function in a cell will typically range from about 0.01 $\mu\text{g/L}$ to about 5 mg/L, in one embodiment, from about 0.01 $\mu\text{g/L}$ to about 2.5 mg/L, in another embodiment, from about 0.01 $\mu\text{g/L}$ to about 0.5 mg/L, and in another embodiment, from about 0.01 $\mu\text{g/L}$ to about 0.25 mg/L of a solution or suspension of a pharmaceutically acceptable carrier or excipient. In one embodiment, the volume of solution or suspension comprising the Pryidylene Compound is from about 0.01 μL to about 1 mL. In another embodiment, the volume of solution or suspension is about 200 μL .

10 [0426] Where a cell capable of expressing VR1, mGluR5, or mGluR1 is contacted with a Pryidylene Compound *in vivo*, the amount effective for inhibiting the receptor function in a cell will typically range from about 0.01 mg/kg of body weight to about 2500 mg/kg of body weight, although it typically ranges from about 100 mg/kg of body weight or less. In one embodiment, the effective dosage amount ranges from about 0.01 mg/kg of body weight to about 100 mg/kg of body weight of a Pryidylene Compound, in another embodiment, about 0.02 mg/kg of body weight to about 50 mg/kg of body weight, and in another embodiment, about 0.025 mg/kg of body weight to about 20 mg/kg of body weight. In one embodiment, an effective dosage amount is administered about every 24 h. In another embodiment, an effective dosage amount is administered about every 12. In another embodiment, an effective dosage amount is administered about every 6 h. In another embodiment, an effective dosage amount is administered about every 4 h.

20 [0427] In this method, the respective cells are not in direct contact with the animal or human body. Where the cells are in direct contact with the human or animal body, the invention relates to the use of pyridylene compounds in the manufacture of a medicament for inhibiting VR1, mGluR5 or mGluR1. The Pyridylene Compounds can be assayed *in vitro* or *in vivo* for the desired therapeutic or prophylactic activity prior to use in humans. Animal model systems can be used to demonstrate safety and efficacy.

25 [0428] The use of pyridylene compounds in the manufacture of a medicament for treating a Condition in an animal in need thereof can further relate to medicaments with another therapeutic agent. In one embodiment, the other therapeutic agent is administered in an effective amount.

30 [0429] The present methods for inhibiting VR1 function in a cell capable of expressing VR1 can further comprise contacting the cell with an effective amount of another therapeutic agent that may or may not inhibit VR1.

[0430] The present methods for inhibiting mGluR5 function in a cell capable of expressing mGluR5 can further comprise contacting the cell with an effective amount of another therapeutic agent that may or may not inhibit mGluR5.

[0431] The present methods for inhibiting mGluR1 function in a cell capable of expressing mGluR1 can further comprise contacting the cell with an effective amount of another therapeutic agent that may or may not inhibit mGluR1.

35 [0432] In this method, the respective cells are not in direct contact with the animal or human body. Where the cells are in direct contact with the human or animal body, the invention relates to the use of pyridylene compounds in the manufacture of a medicament for inhibiting VR1, mGluR5 or mGluR1. Effective amounts of the other therapeutic agents are known to those skilled in the art. However, it is well within the skilled artisan's purview to determine the other therapeutic agent's optimal effective-amount range. In one embodiment of the invention, where another therapeutic agent is administered to an animal, the minimal effective amount of the Pyridylene Compound is less than its minimal effective amount would be where the other therapeutic agent is not administered. In this embodiment, without being bound by theory, it is believed that the Pyridylene Compounds and the other therapeutic agent act synergistically to treat or prevent a Condition.

40 [0433] The other therapeutic agent can be, but is not limited to, an opioid agonist, a non-opioid analgesic, a non-steroidal anti-inflammatory agent, an antimigraine agent, a Cox-II inhibitor, an antiemetic, a β -adrenergic blocker, an anticonvulsant, an antidepressant, a Ca^{2+} -channel blocker, an anticancer agent, an agent for treating or preventing UI, an agent for treating or preventing an ulcer, an agent for treating or preventing IBD, an agent for treating or preventing IBS, an agent for treating addictive disorder, an agent for treating Parkinson's disease and parkinsonism, an agent for treating anxiety, an agent for treating epilepsy, an agent for treating a stroke, an agent for treating a seizure, an agent for treating a pruritic condition, an agent for treating psychosis, an agent for treating Huntington's chorea, an agent for treating ALS, an agent for treating a cognitive disorder, an agent for treating a migraine, an agent for inhibiting vomiting, an agent for treating dyskinesia, or an agent for treating depression, and mixtures thereof.

45 [0434] Examples of useful opioid agonists include, but are not limited to, alfentanil, allylprodine, alphaprodine, anileridine, benzylmorphine, bezitramide, buprenorphine, butorphanol, clonitazene, codeine, desomorphine, dextromoramide, dezocine, diampromide, diamorphine, dihydrocodeine, dihydromorphine, dimenoxadol, dimepheptanol, dimethylthiambutene, dioxaphetyl butyrate, dipipanone, eptazocine, ethoheptazine, ethylmethylthiambutene, ethylmorphine, etonitazene fentanyl, heroin, hydrocodone, hydromorphone, hydroxypethidine, isomethadone, ketobemidone, levorphanol, levophenacymorphan, lofentanil, meperidine, meptazinol, metazocine, methadone, metopon, morphine, myro-

phine, nalbuphine, narceine, nicomorphine, norlevorphanol, normethadone, nalorphine, normorphine, norpipanone, opium, oxycodone, oxymorphone, papaveretum, pentazocine, phenadoxone, phenomorphan, phenazocine, phenoperidine, piminodine, piritramide, proheptazine, promedol, properidine, propiram, propoxyphene, sufentanil, tilidine, tramadol, pharmaceutically acceptable salts thereof, and mixtures thereof.

5 **[0435]** In certain embodiments, the opioid agonist is selected from codeine, hydromorphone, hydrocodone, oxycodone, dihydrocodeine, dihydromorphine, morphine, tramadol, oxymorphone, pharmaceutically acceptable salts thereof, and mixtures thereof.

10 **[0436]** Examples of useful non-opioid analgesics include non-steroidal anti-inflammatory agents, such as aspirin, ibuprofen, diclofenac, naproxen, benoxaprofen, flurbiprofen, fenoprofen, flubufen, ketoprofen, indoprofen, piroprofen, carprofen, oxaprozin, pramoprofen, muprofen, trioxaprofen, suprofen, aminoprofen, tiaprofenic acid, fluprofen, buclic acid, indomethacin, sulindac, tolmetin, zomepirac, tiopinac, zidometacin, acemetacin, fentiazac, clidanac, oxpinac, mefenamic acid, meclofenamic acid, flufenamic acid, niflumic acid, tolfenamic acid, diflurisal, flufenisal, piroxicam, suloxicam, isoxicam, and pharmaceutically acceptable salts thereof, and mixtures thereof. Other suitable non-opioid analgesics include the following, non-limiting, chemical classes of analgesic, antipyretic, nonsteroidal anti-inflammatory drugs: salicylic acid derivatives, including aspirin, sodium salicylate, choline magnesium trisalicylate, salsalate, diflunisal, salicylsalicylic acid, sulfasalazine, and olsalazin; para-aminophenol derivatives including acetaminophen and phenacetin; indole and indene acetic acids, including indomethacin, sulindac, and etodolac; heteroaryl acetic acids, including tolmetin, diclofenac, and ketorolac; anthranilic acids (fenamates), including mefenamic acid and meclofenamic acid; enolic acids, including oxicams (piroxicam, tenoxicam), and pyrazolidinediones (phenylbutazone, oxyphenthartazone); and alkanones, including nabumetone. For a more detailed description of the NSAIDs, see Paul A. Insel, Analgesic-Antipyretic and Anti-inflammatory Agents and Drugs Employed in the Treatment of Gout, in Goodman & Gilman's The Pharmacological Basis of Therapeutics 617-57 (Perry B. Molinoff and Raymond W. Ruddon eds., 9th ed 1996); and Glen R. Hanson, Analgesic, Antipyretic and Anti-Inflammatory Drugs in Remington: The Science and Practice of Pharmacy Vol II 1196-1221 (A.R. Gennaro ed. 19th ed. 1995), which are hereby incorporated by reference in their entireties.

25 **[0437]** Examples of useful Cox-II inhibitors and 5-lipoxygenase inhibitors, as well as combinations thereof, are described in U.S. Patent No. 6,136,839, which is hereby incorporated by reference in its entirety. Examples of useful Cox-II inhibitors include, but are not limited to, rofecoxib and celecoxib.

30 **[0438]** Examples of useful antimigraine agents include, but are not limited to, alipropride, bromocriptine, dihydroergotamine, dolasetron, ergocomine, ergocorninine, ergocryptine, ergonovine, ergot, ergotamine, flumetorexone acetate, fonazine, ketanserin, lisuride, lomerizine, methylegonovine, methysergide, metoprolol, naratriptan, oxetorone, pizotylline, propranolol, risperidone, rizatriptan, sumatriptan, timolol, trazodone, zolmitriptan, and mixtures thereof.

35 **[0439]** The other therapeutic agent can also be an antiemetic agent. Examples of useful antiemetic agents include, but are not limited to, metoclopramide, domperidone, prochlorperazine, promethazine, chlorpromazine, trimethobenzamide, odansteron, granisetron, hydroxyzine, acetylleucine monoethanolamine, alizapride, azasetron, benzquinamide, bietanautine, bromopride, buclizine, clebopride, cyclizine, dimenhydrinate, diphenidol, dolasetron, meclizine, methallatal, metopimazine, nabilone, oxypendyl, pipamazine, scopolamine, sulphiride, tetrahydrocannabinol, thiethylperazine, thio-properazine, tropisetron, and mixtures thereof.

40 **[0440]** Examples of useful β -adrenergic blockers include, but are not limited to, acebutolol, alprenolol, amosulabol, arotinolol, atenolol, befunolol, betaxolol, bevantolol, bisoprolol, bopindolol, bucumolol, bufetolol, bufuralol, bunitrolol, bupranolol, butidrine hydrochloride, butofilolol, carazolol, carteolol, carvedilol, celiprolol, cetamolol, cloranolol, dilevalol, epanolol, esmolol, indenolol, labetalol, levobunolol, mepindolol, metipranolol, metoprolol, moprolol, nadolol, nadoxolol, nebivalol, nifenalol, nipradilol, oxprenolol, penbutolol, pindolol, practolol, pronethalol, propranolol, sotalol, sulfinalol, talinolol, tertatolol, tilisolol, timolol, toliprolol, and xibenolol.

45 **[0441]** Examples of useful anticonvulsants include, but are not limited to, acetylpheneturide, albutoin, aloxidone, aminoglutethimide, 4-amino-3-hydroxybutyric acid, atrolactamide, beclamide, buramate, calcium bromide, carbamazepine, cinromide, clomethiazole, clonazepam, decimemide, diethadione, dimethadione, doxenitroin, eterobarb, ethadione, ethosuximide, ethotoin, felbamate, fluoresone, gabapentin, 5-hydroxytryptophan, lamotrigine, magnesium bromide, magnesium sulfate, mephenytoin, mephobarbital, metharbital, methetoin, methsuximide, 5-methyl-5-(3-phenanthryl)-hydantoin, 3-methyl-5-phenylhydantoin, narcobarbital, nimetazepam, nitrazepam, oxcarbazepine, paramethadione, phenacemide, phenetharbital, pheneturide, phenobarbital, phensuximide, phenylmethylbarbituric acid, phenytoin, phethenylate sodium, potassium bromide, pregabalin, primidone, progabide, sodium bromide, solanum, strontium bromide, suclofenide, sulthiame, tetrantoin, tiagabine, topiramate, trimethadione, valproic acid, valpromide, vigabatrin, and zonisamide.

55 **[0442]** Examples of useful antidepressants include, but are not limited to, binedaline, caroxazone, citalopram, (S)-citalopram, dimethazan, fencamine, indalpine, indeloxazine hydrochloride, nefopam, nomifensine, oxitriptan, oxypertine, paroxetine, sertraline, thiazesim, trazodone, benmoxine, iproclozide, iproniazid, isocarboxazid, nialamide, octamoxin, phenelzine, cotinine, rolicyprine, rolipram, maprotiline, metralindole, mianserin, mirtazepine, adinazolam, amitriptyline, amitriptylinoxide, amoxapine, butriptyline, clomipramine, demexiptiline, desipramine, dibenzepin, dimetacrine, dothiepin,

doxepin, fluacizine, imipramine, imipramine N-oxide, iprindole, lofepramine, melitracen, metapramine, nortriptyline, noxiptilin, opipramol, pizotyline, propizepine, protriptyline, quinupramine, tianeptine, trimipramine, adrafinil, benactyzine, bupropion, butacetin, dioxadrol, duloxetine, etoperidone, febarbamate, femoxetine, fenpentadiol, fluoxetine, fluvoxamine, hematoporphyrin, hypericin, levophacetoperane, medifoxamine, milnacipran, minaprine, moclobemide, nefazodone, oxaflozane, piberaline, prolintane, pyrisuccideanol, ritanserin, roxindole, rubidium chloride, sulphiride, tandospirone, thozalinone, tofenacin, toloxatone, tranlycypromine, L-tryptophan, venlafaxine, viloxazine, and zimelidine.

[0443] Examples of useful Ca²⁺-channel blockers include, but are not limited to, bepridil, clentiazem, diltiazem, fendiline, gallopamil, mibefradil, prenylamine, semotiadil, terodiline, verapamil, amlodipine, aranidipine, barnidipine, benidipine, cilnidipine, efonidipine, elgodipine, felodipine, isradipine, lacidipine, lercanidipine, manidipine, nifedipine, nilvadipine, nimodipine, nisoldipine, nitrendipine, cinnarizine, flunarizine, lidoflazine, lomerizine, bencyclane, etafenone, fantofarone, and perhexiline.

[0444] Examples of useful anticancer agents include, but are not limited to, acivicin, aclarubicin, acodazole hydrochloride, acronine, adozelesin, aldesleukin, altretamine, ambomycin, ametantrone acetate, aminoglutethimide, amsacrine, anastrozole, anthramycin, asparaginase, asperlin, azacitidine, azetepa, azotomycin, batimastat, benzodepa, bicalutamide, bisantrene hydrochloride, bisnafide dimesylate, bizelesin, bleomycin sulfate, brequinar sodium, bropirimine, busulfan, cactinomycin, calusterone, caracemide, carbetimer, carboplatin, carmustine, carubicin hydrochloride, carzelesin, cedefingol, chlorambucil, cirolemycin, cisplatin, cladribine, crisnatol mesylate, cyclophosphamide, cytarabine, dacarbazine, dactinomycin, daunorubicin hydrochloride, decitabine, dexormaplatin, dezaguanine, dezaguanine mesylate, diaziquone, docetaxel, doxorubicin, doxorubicin hydrochloride, droloxifene, droloxifene citrate, dromostanolone propionate, duazomycin, edatrexate, eflornithine hydrochloride, estramustine, estramustine phosphate sodium, etanidazole, etoposide, etoposide phosphate, etoprine, fadrozole hydrochloride, fazarabine, fenretinide, floxuridine, fludarabine phosphate, fluorouracil, flurocitabine, fosquidone, fostriecin sodium, gemcitabine, gemcitabine hydrochloride, hydroxyurea, idarubicin hydrochloride, ifosfamide, ilmofosine, interleukin II (including recombinant interleukin II or rIL2), interferon alpha-2a, interferon alpha-2b, interferon alpha-n1, interferon alpha-n3, interferon beta-I a, interferon gamma-I b, iproplatin, irinotecan hydrochloride, lanreotide acetate, letrozole, leuprolide acetate, liarozole hydrochloride, lometrexol sodium, lomustine, losoxantrone hydrochloride, masoprocol, maytansine, mechlorethamine hydrochloride, megestrol acetate, melengestrol acetate, melphalan, menogaril, mercaptopurine, methotrexate, methotrexate sodium, metoprine, meturedopa, mitindomide, mitocarcin, mitocromin, mitogillin, mitomalcin, mitomycin, mitosper, mitotane, mitoxantrone hydrochloride, mycophenolic acid, nocodazole, nogalamycin, ormaplatin, oxisuran, paclitaxel, pegaspargase, peliomycin, pentamustine, peplomycin sulfate, perfosfamide, pipobroman, pipsulfan, piroxantrone hydrochloride, plicamycin, plomestane, porfimer sodium, porfiromycin, prednimustine, procarbazine hydrochloride, puromycin, puromycin hydrochloride, pyrazofurin, riboprime, rogletimide, safingol, safingol hydrochloride, semustine, simtrazene, sparfosate sodium, sparsomycin, spirogermanium hydrochloride, spiromustine, spiroplatin, streptonigrin, streptozotocin, sulofenur, talisomycin, tecogalan sodium, tegafur, teloxantrone hydrochloride, temoporfin, teniposide, teroxirone, testolactone, thiamiprine, thioguanine, thiotepa, tiazofurin, tirapazamine, toremifene citrate, trestolone acetate, triciribine phosphate, trimetrexate, trimetrexate glucuronate, triptorelin, tubulozole hydrochloride, uracil mustard, uredepa, vapreotide, verteporfin, vinblastine sulfate, vincristine sulfate, vindesine, vindesine sulfate, vinepidine sulfate, vinglycinate sulfate, vinleurosine sulfate, vinorelbine tartrate, vinrosidine sulfate, vinzolidine sulfate, vorozole, zeniplatin, zinostatin, zorubicin hydrochloride.

[0445] Examples of other anti-cancer drugs include, but are not limited to, 20-epi-1,25 dihydroxyvitamin D₃; 5-ethynyluracil; abiraterone; aclarubicin; acylfulvene; adecyphenol; adozelesin; aldesleukin; ALL-TK antagonists; altretamine; ambamustine; amidox; amifostine; aminolevulinic acid; amrubicin; amsacrine; anagrelide; anastrozole; andrographolide; angiogenesis inhibitors; antagonist D; antagonist G; antarelix; anti-dorsalizing morphogenetic protein-1; antiandrogen, prostatic carcinoma; antiestrogen; antineoplaston; antisense oligonucleotides; aphidicolin glycinate; apoptosis gene modulators; apoptosis regulators; apurinic acid; ara-CDP-DL-PTBA; arginine deaminase; asulacrine; atamestane; atrimustine; axinastatin 1; axinastatin 2; axinastatin 3; azasetron; azatoxin; azatyrosine; baccatin III derivatives; balanol; batimastat; BCR/ABL antagonists; benzochlorins; benzoylstauosporine; beta lactam derivatives; beta-alethine; beta-clamycin B; betulinic acid; bFGF inhibitor; bicalutamide; bisantrene; bisaziridinylspermine; bisnafide; bistratene A; bizelesin; breflate; bropirimine; budotitane; buthionine sulfoximine; calcipotriol; calphostin C; camptothecin derivatives; canarypox IL-2; capecitabine; carboxamide-amino-triazole; carboxyamidotriazole; CaRest M3; CARN 700; cartilage derived inhibitor; carzelesin; casein kinase inhibitors (ICOS); castanospermine; cecropin B; cetorelix; chlorins; chloroquinoline sulfonamide; cicaprost; cis-porphyrin; cladribine; clomifene analogues; clotrimazole; collismycin A; collismycin B; combretastatin A4; combretastatin analogue; conagenin; crambescidin 816; crisnatol; cryptophycin 8; cryptophycin A derivatives; curacin A; cyclopentantraquinones; cycloplatam; cypemycin; cytarabine ocfosfate; cytolytic factor; cyto-statin; dacliximab; decitabine; dehydroidemnin B; deslorelin; dexamethasone; dexifosfamide; dexrazoxane; dexverapamil; diaziquone; didemnin B; didox; diethylmorspermine; dihydro-5-azacytidine; 9-dihydrotaxol; dioxamycin; diphenyl spiromustine; docetaxel; docosanol; dolasetron; doxifluridine; droloxifene; dronabinol; duocarmycin SA; ebselen; ecomustine; edelfosine; edrecolomab; eflornithine; elemene; emitefur; epirubicin; epristeride; estramustine analogue;

estrogen agonists; estrogen antagonists; etanidazole; etoposide phosphate; exemestane; fadrozole; fazarabine; fenretinide; filgrastim; finasteride; flavopiridol; flezelastine; fluasterone; fludarabine; fluorodaunorubicin hydrochloride; formimex; formestane; fostriecin; fotemustine; gadolinium texaphyrin; gallium nitrate; galocitabine; ganirelix; gelatinase inhibitors; gemcitabine; glutathione inhibitors; hepsulfam; heregulin; hexamethylene bisacetamide; hypericin; ibandronic acid; idarubicin; idoxifene; idramantone; ilmofosine; ilomastat; imidazoacridones; imiquimod; immunostimulant peptides; insulin-like growth factor-1 receptor inhibitor; interferon agonists; interferons; interleukins; iobenguane; iododoxorubicin; 4-ipomeanol; iroplact; irsogladine; isobengazole; isohomohalicondrin B; itasetron; jasplakinolide; kahalalide F; lamellarin-N triacetate; lanreotide; leinamycin; lenograstim; lentinan sulfate; leptostatin; letrozole; leukemia inhibiting factor; leukocyte alpha interferon; leuprolide+estrogen+progesterone; leuprorelin; levamisole; liarozole; linear polyamine analogue; lipophilic disaccharide peptide; lipophilic platinum compounds; lissoclinamide 7; lobaplatin; lombricine; lometrexol; lonidamine; losoxantrone; lovastatin; loxoribine; lurtotecan; lutetium texaphyrin; lysofylline; lytic peptides; maitansine; mannostatin A; marimastat; masoprocol; maspin; matrilysin inhibitors; matrix metalloproteinase inhibitors; menogaril; merbarone; meterelin; methioninase; metoclopramide; MIF inhibitor; mifepristone; miltefosine; mirimostim; mismatched double stranded RNA; mitoguazone; mitolactol; mitomycin analogues; mitonafide; mitotoxin fibroblast growth factor-saporin; mitoxantrone; mofarotene; molgramostim; monoclonal antibody, human chorionic gonadotrophin; monophosphoryl lipid A+myobacterium cell wall sk; mopidamol; multiple drug resistance gene inhibitor; multiple tumor suppressor 1-based therapy; mustard anticancer agent; mycaperoxide B; mycobacterial cell wall extract; myriaporone; N-acetyldinaline; N-substituted benzamides; nafarelin; nagrestip; naloxone+pentazocine; napavin; naphterpin; nartograstim; nedaplatin; nemorubicin; neridronic acid; neutral endopeptidase; nilutamide; nisamycin; nitric oxide modulators; nitroxide antioxidant; nitrullyn; O6-benzylguanine; octreotide; okicenone; oligonucleotides; onapristone; odansteron; oracin; oral cytokine inducer; ormaplatin; osaterone; oxaliplatin; oxaunomycin; paclitaxel; paclitaxel analogues; paclitaxel derivatives; palauamine; palmitoylrhizoxin; pamidronic acid; panaxytriol; panomifene; parabactin; pazelliptine; pegaspargase; peldesine; pentosan polysulfate sodium; pentostatin; pentrozole; perflubron; perfosfamide; perillyl alcohol; phenazinomycin; phenylacetate; phosphatase inhibitors; picibanil; pilocarpine hydrochloride; pirarubicin; piritrexim; placetin A; placetin B; plasminogen activator inhibitor; platinum complex; platinum compounds; platinum-triamine complex; porfimer sodium; porfiromycin; prednisone; propyl bis-acridone; prostaglandin J2; proteasome inhibitors; protein A-based immune modulator; protein kinase C inhibitor; protein kinase C inhibitors, microalgal; protein tyrosine phosphatase inhibitors; purine nucleoside phosphorylase inhibitors; purpurins; pyrazoloacridine; pyridoxylated hemoglobin polyoxyethylene conjugate; raf antagonists; raltitrexed; ramosetron; ras farnesyl protein transferase inhibitors; ras inhibitors; ras-GAP inhibitor; retelliptine demethylated; rhenium Re 186 etidronate; rhizoxin; ribozymes; RII retinamide; rogletimide; rohitukine; romurtide; roquinimex; rubiginone B1; ruboxyl; safingol; saintopin; SarCNU; sarcophytol A; sargramostim; Sdi 1 mimetics; semustine; senescence derived inhibitor 1; sense oligonucleotides; signal transduction inhibitors; signal transduction modulators; single chain antigen binding protein; sizofiran; sobuzoxane; sodium borocaptate; sodium phenylacetate; solverol; somatomedin binding protein; sonermin; sparfosic acid; spicamycin D; spiromustine; splenopentin; spongistatin 1; squalamine; stem cell inhibitor; stem-cell division inhibitors; stipiamide; stromelysin inhibitors; sulfinosine; superactive vasoactive intestinal peptide antagonist; suradista; suramin; swainsonine; synthetic glycosaminoglycans; tallimustine; tamoxifen methiodide; taumustine; tazarotene; tecogalan sodium; tegafur; tellurapyrylium; telomerase inhibitors; temoporfin; temozolomide; teniposide; tetrachlorodecaoxide; tetrazomine; thaliblastine; thiocoraline; thrombopoietin; thrombopoietin mimetic; thymalfasin; thymopoietin receptor agonist; thymotrinan; thyroid stimulating hormone; tin ethyl etiopurpurin; tirapazamine; titanocene bichloride; topsentin; toremifene; totipotent stem cell factor; translation inhibitors; tretinoin; triacetyluridine; triciribine; trimetrexate; triptorelin; tropisetron; turosteride; tyrosine kinase inhibitors; tyrphostins; UBC inhibitors; ubenimex; urogenital sinus-derived growth inhibitory factor; urokinase receptor antagonists; vapreotide; variolin B; vector system, erythrocyte gene therapy; velaresol; veramine; verdins; verteporfin; vinorelbine; vinxaltine; vitaxin; vorozole; zanoterone; zeniplatin; zilascorb; and zinostatin stimalamer.

[0446] Examples of useful therapeutic agents for treating or preventing UI include, but are not limited to, propantheline, imipramine, hyoscyamine, oxybutynin, and dicyclomine.

[0447] Examples of useful therapeutic agents for treating or preventing an ulcer include, antacids such as aluminum hydroxide, magnesium hydroxide, sodium bicarbonate, and calcium bicarbonate; sucralfate; bismuth compounds such as bismuth subsalicylate and bismuth subcitrate; H2 antagonists such as cimetidine, ranitidine, famotidine, and nizatidine; H+, K+ - ATPase inhibitors such as omeprazole, lansoprazole, and esomeprazole; carbenoxolone; misoprostol; and antibiotics such as tetracycline, metronidazole, tinidazole, clarithromycin, and amoxicillin.

[0448] Examples of useful therapeutic agents for treating or preventing IBD include, but are not limited to, anticholinergic drugs; diphenoxylate; loperamide; deodorized opium tincture; codeine; broad-spectrum antibiotics such as metronidazole; sulfasalazine; olsalazine; mesalamine; prednisone; azathioprine; mercaptopurine; and methotrexate.

[0449] Examples of useful therapeutic agents for treating or preventing IBS include, but are not limited to, propantheline; muscarine receptor antagonists such as pirenzapine, methoctramine, ipratropium, tiotropium, scopolamine, methscopolamine, homatropine, homatropine methylbromide, and methantheline; and antidiarrheal drugs such as diphenoxylate and loperamide.

[0450] Examples of useful therapeutic agents for treating or preventing an addictive disorder include, but are not limited to, methadone, desipramine, amantadine, fluoxetine, buprenorphine, an opiate agonist, 3-phenoxypropylidene, levomethadyl acetate hydrochloride, and serotonin antagonists.

[0451] Examples of useful therapeutic agents for treating or preventing Parkinson's disease and parkinsonism include, but are not limited to, carbidopa/levodopa, pergolide, bromocriptine, ropinirole, pramipexole, entacapone, tolcapone, selegiline, amantadine, and trihexyphenidyl hydrochloride.

[0452] Examples of useful therapeutic agents for treating or preventing anxiety include, but are not limited to, benzodiazepines, such as alprazolam, brotizolam, chlordiazepoxide, clobazam, clonazepam, clorazepate, demoxepam, diazepam, estazolam, flumazenil, flurazepam, halazepam, lorazepam, midazolam, nitrazepam, nordazepam, oxazepam, prazepam, quazepam, temazepam, and triazolam; non-benzodiazepine agents, such as buspirone, gepirone, ipsapirone, tirosiprone, zolpidem, and zaleplon; tranquilizers, such as barbiturates, e.g., amobarbital, aprobarbital, butabarbital, butalbital, mephobarbital, methohexital, pentobarbital, phenobarbital, secobarbital, and thiopental; and propanediol carbamates, such as meprobamate and tybamate.

[0453] Examples of useful therapeutic agents for treating or preventing epilepsy include, but are not limited to, carbamazepine, ethosuximide, gabapentin, lamotrigine, phenobarbital, phenytoin, primidone, valproic acid, trimethadione, benzodiazepines, γ -vinyl GABA, acetazolamide, and felbamate.

[0454] Examples of useful therapeutic agents for treating or preventing stroke include, but are not limited to, anticoagulants such as heparin, agents that break up clots such as streptokinase or tissue plasminogen activator, agents that reduce swelling such as mannitol or corticosteroids, and acetylsalicylic acid.

[0455] Examples of useful therapeutic agents for treating or preventing a seizure include, but are not limited to, carbamazepine, ethosuximide, gabapentin, lamotrigine, phenobarbital, phenytoin, primidone, valproic acid, trimethadione, benzodiazepines, gabapentin, lamotrigine, γ -vinyl GABA, acetazolamide, and felbamate.

[0456] Examples of useful therapeutic agents for treating or preventing a pruritic condition include, but are not limited to, naltrexone; nalmefene; danazol; tricyclics such as amitriptyline, imipramine, and doxepin; antidepressants such as those given below, menthol; camphor; phenol; pramoxine; capsaicin; tar; steroids; and antihistamines.

[0457] Examples of useful therapeutic agents for treating or preventing psychosis include, but are not limited to, phenothiazines such as chlorpromazine hydrochloride, mesoridazine besylate, and thioridazine hydrochloride; thioxanthenes such as chlorprothixene and thiothixene hydrochloride; clozapine; risperidone; olanzapine; quetiapine; quetiapine fumarate; haloperidol; haloperidol decanoate; loxapine succinate; molindone hydrochloride; pimozide; and ziprasidone.

[0458] Examples of useful therapeutic agents for treating or preventing Huntington's chorea include, but are not limited to, haloperidol and pimozide.

[0459] Examples of useful therapeutic agents for treating or preventing ALS include, but are not limited to, baclofen, neurotrophic factors, riluzole, tizanidine, benzodiazepines such as clonazepam and dantrolene.

[0460] Examples of useful therapeutic agents for treating or preventing cognitive disorders include, but are not limited to, agents for treating or preventing dementia such as tacrine; donepezil; ibuprofen; antipsychotic drugs such as thioridazine and haloperidol; and antidepressant drugs such as those given below.

[0461] Examples of useful therapeutic agents for treating or preventing a migraine include, but are not limited to, sumatriptan; methysergide; ergotamine; caffeine; and beta-blockers such as propranolol, verapamil, and divalproex.

[0462] Examples of useful therapeutic agents for treating, inhibiting, or preventing vomiting include, but are not limited to, 5-HT₃ receptor antagonists such as odansteron, dolasetron, granisetron, and tropisetron; dopamine receptor antagonists such as prochlorperazine, thiethylperazine, chlorpromazine, metoclopramide, and domperidone; glucocorticoids such as dexamethasone; and benzodiazepines such as lorazepam and alprazolam.

[0463] Examples of useful therapeutic agents for treating or preventing dyskinesia include, but are not limited to, reserpine and tetrabenazine.

[0464] Examples of useful therapeutic agents for treating or preventing depression include, but are not limited to, tricyclic antidepressants such as amitriptyline, amoxapine, bupropion, clomipramine, desipramine, doxepin, imipramine, maprotiline, nefazadone, nortriptyline, protriptyline, trazodone, trimipramine, and venlafaxine; selective serotonin reuptake inhibitors such as citalopram, (S)-citalopram, fluoxetine, fluvoxamine, paroxetine, and setraline; monoamine oxidase inhibitors such as isocarboxazid, pargyline, phenelzine, and tranylcypromine; and psychostimulants such as dextroamphetamine and methylphenidate.

[0465] A Pyridylene Compound and the other therapeutic agent combined can act additively or, in one embodiment, synergistically. In one embodiment, a Pyridylene Compound is administered concurrently with another therapeutic agent, for example, a composition comprising an effective amount of a Pyridylene Compound and an effective amount of another therapeutic agent can be administered. Alternatively, a composition comprising an effective amount of a Pyridylene Compound and a different composition comprising an effective amount of another therapeutic agent can be concurrently administered. In another embodiment, an effective amount of a Pyridylene Compound is administered prior or subsequent to administration of an effective amount of another therapeutic agent. In this embodiment, the Pyridylene

Compound is administered while the other therapeutic agent exerts its therapeutic effect, or the other therapeutic agent is administered while the Pyridylene Compound exerts its therapeutic effect for treating or preventing a Condition.

5 [0466] A composition of the invention is prepared by a method comprising admixing a Pyridylene Compound or a pharmaceutically acceptable salt and a pharmaceutically acceptable carrier or excipient. Admixing can be accomplished using methods known for admixing a compound (or salt) and a pharmaceutically acceptable carrier or excipient. In one embodiment, the Pyridylene Compound is present in the composition in an effective amount.

4.8 KITS

10 [0467] The invention encompasses kits that can simplify the administration of a Pyridylene Compound to an animal.

[0468] A typical kit of the invention comprises a unit dosage form of a Pyridylene Compound. In one embodiment, the unit dosage form is a container, which can be sterile, containing an effective amount of a Pyridylene Compound and a pharmaceutically acceptable carrier or excipient. The kit can further comprise a label or printed instructions instructing the use of the Pyridylene Compound to treat or prevent a Condition. The kit can also further comprise a unit dosage form of another therapeutic agent, for example, a second container containing an effective amount of the other therapeutic agent and a pharmaceutically acceptable carrier or excipient. In another embodiment, the kit comprises a container containing an effective amount of a Pyridylene Compound, an effective amount of another therapeutic agent and a pharmaceutically acceptable carrier or excipient. Examples of other therapeutic agents include, but are not limited to, those listed above.

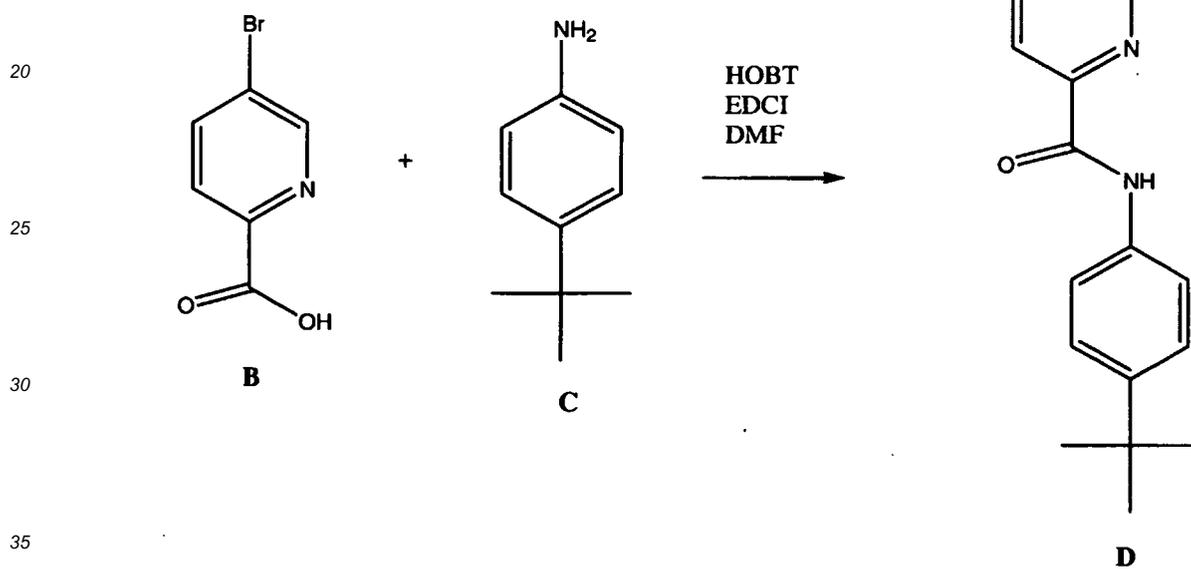
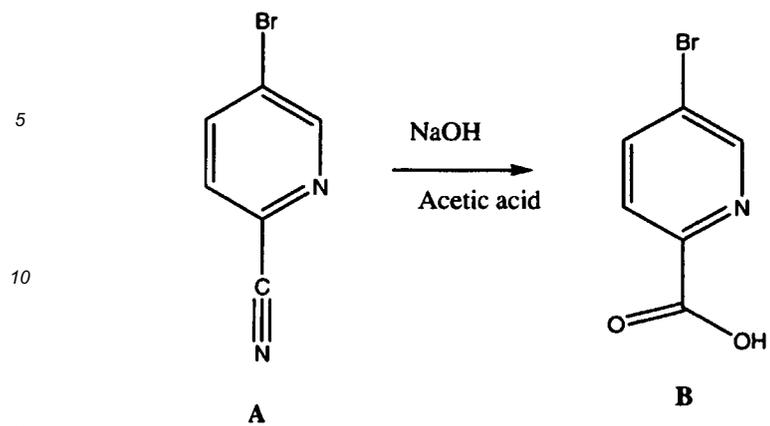
20 [0469] Kits of the invention can further comprise a device that is useful for administering the unit dosage forms. Examples of such a device include, but are not limited to, a syringe, a drip bag, a patch, an inhaler, and an enema bag.

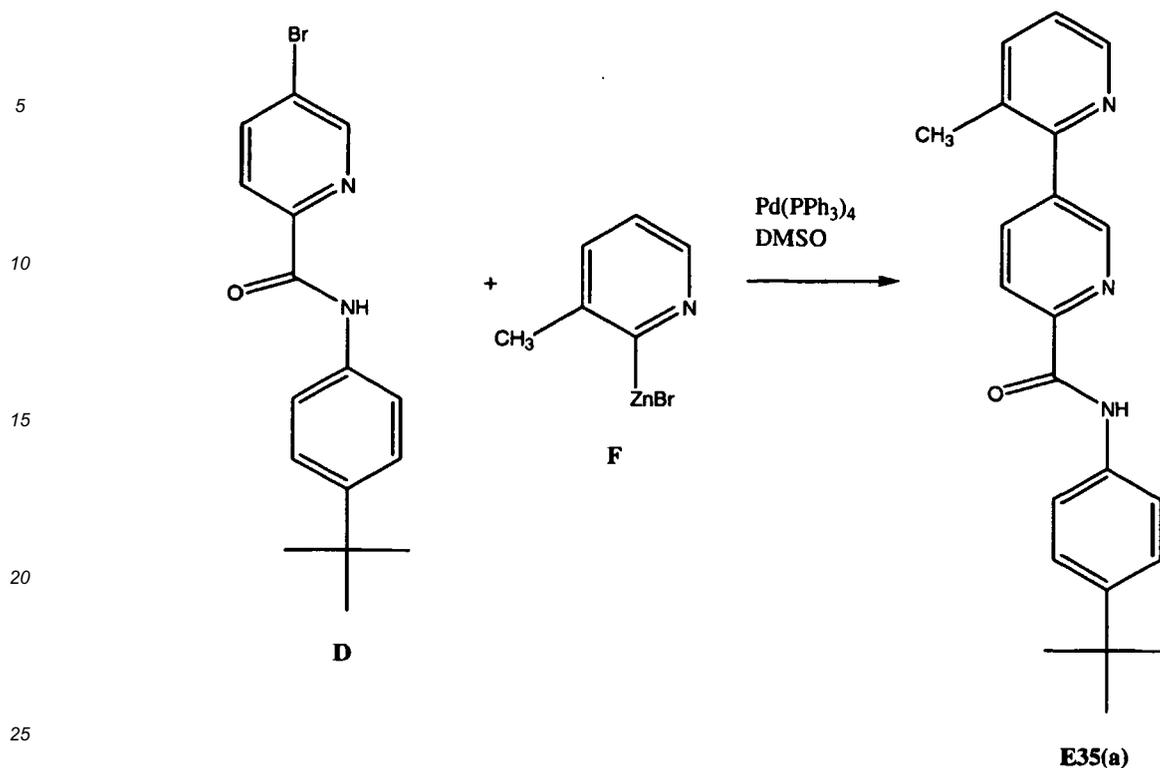
[0470] The following examples are set forth to assist in understanding the invention and should not be construed as specifically limiting the invention described and claimed herein. Such variations of the invention, including the substitution of all equivalents now known or later developed, which would be within the purview of those skilled in the art, and changes in formulation or changes in experimental design, are to be considered to fall within the scope of the invention incorporated herein.

5. EXAMPLES

30 5.1 EXAMPLE 1: SYNTHESIS OF PYRIDYLENE COMPOUND E35(a)

[0471]





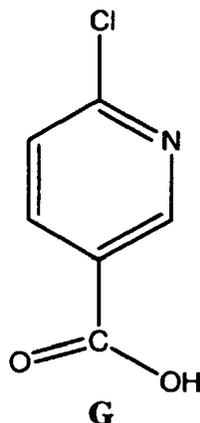
[0472] To a solution of 5-bromopyridine-2-carbonitrile (commercially available from Sigma-Aldrich, St. Louis, MO) in ethanol (1.4 M) was added 3 equivalents of sodium hydroxide as a 1.5 M aqueous solution and the resulting solution was allowed to reflux at a temperature of about 85°C until no further evolution of ammonia gas was detected. The resulting solution was then concentrated under reduced pressure to provide a residue. The residue was dissolved in water, acidified with acetic acid, and allowed to stir for about 16 h at a temperature of about 25°C to provide a solid precipitate. The solid was collected by vacuum filtration and washed with acetone to provide 5-bromopyridine-2-carboxylic acid (Compound **B**) as a solid. 5-bromopyridine-2-carboxylic acid (Compound **B**), 0.5 equivalents of HOBT, and 1 equivalent of EDCI were dissolved in DMF and combined with about 1.1 equivalents of 4-*tert*-butylaniline (Compound **C**; commercially available from Sigma-Aldrich) dissolved in DMF (0.8 M) and the resulting mixture was allowed to stir for about 2 h at about 25°C. The reaction mixture was then diluted with about 80 mL of 2N aqueous sodium hydroxide and extracted with ethyl acetate (3 extractions, 80 mL/extraction). The ethyl acetate layers were combined and the ethyl acetate was removed under reduced pressure to provide a solid. The resulting solid was suspended in water and filtered using vacuum filtration to provide Compound **D** as a solid. Compound **D** was dissolved in DMF (0.04M) and about 3 equivalents of the zinc bromide Compound **F** (commercially available from Sigma-Aldrich) and about 0.05 equivalents of $\text{Pd(PPh}_3)_4$ (commercially available from Sigma-Aldrich) were added to the solution under a nitrogen atmosphere, and the resulting reaction mixture was allowed to stir for about 2 h at a temperature of about 100°C. The solvent was then removed under reduced pressure to provide Pyridylene Compound **E35(a)**. Pyridylene Compound **E35(a)** was purified using preparative thin-layer chromatography with a 1:1 ethyl acetate:hexane mobile phase to provide purified Pyridylene Compound **E35(a)** as an off-white solid (yield 47%).

[0473] The identity of Pyridylene Compound **E35(a)** was confirmed using $^1\text{H NMR}$.

[0474] Compound **E35(a)**: $^1\text{H NMR}$ (CDCl_3) δ : 10.000 (s, 1H), 8.807 (s, 1H), 8.596 (d, 1H), 8.389 (d, 1H), 8.094 (dd, 1H), 7.732 (d, 2H), 7.654 (d, 1H), 7.421 (d, 2H), 7.279 (m, 1H + CDCl_3), 2.418 (s, 3H), 1.341 (s, 9H).

5.2 EXAMPLE 2: SYNTHESIS OF PYRIDYLENE COMPOUND E35(b)

[0475] Pyridylene Compound **E35(b)** was made by a procedure analogous to that used to make Pyridylene Compound **E35(a)** in Example 1 except that 6-chloronicotinic acid (Compound **G**), shown below:



was used in place of 5-bromopyridine-2-carboxylic acid (Compound **B**).

6-Chloronicotinic acid (Compound **G**) was obtained by hydrolyzing 6-chloronicotinic acid ethyl ester (commercially available from Sigma-Aldrich).

20 **[0476]** Pyridylene Compound **E35(b)** was obtained as a white solid (yield 22%).

[0477] The identity of Pyridylene Compound **E35(b)** was confirmed using ^1H NMR.

[0478] Compound **E35(b)**: ^1H NMR (CDCl_3) δ : 9.167-9.128 (s, 1H), 8.588-8.546 (d, 1H), 8.322-8.277 (dd, 1H), 8.022-7.972 (d, 1H), 7.929-7.880 (s, 1H), 7.675-7.634 (d, 1H), 7.614-7.556 (d, 1H), 7.453-7.395 (d, 1H), 7.307-7.264 (m, 1H), 2.581-2.536 (s, 3H), 1.607-1.540 (s, 9H).

25 5.3 EXAMPLE 3: BINDING OF PYRIDYLENE COMPOUNDS TO mGluR5

[0479] The following assay can be used to demonstrate that Pyridylene Compounds bind to and modulate the activity of mGluR5.

30 **[0480]** Cell Cultures: Primary glial cultures are prepared from cortices of Sprague-Dawley 18 days old embryos. The cortices are dissected and then dissociated by trituration. The resulting cell homogenate is plated onto poly-D-lysine precoated T175 flasks (BIOCOAT, commercially available from Becton Dickinson and Company Inc. of Franklin Lakes, NJ) in Dulbecco's Modified Eagle's Medium ("DMEM," pH 7.4), buffered with 25 mM HEPES, and supplemented with 15% fetal calf serum ("FCS," commercially available from Hyclone Laboratories Inc. of Omaha, NE), and incubated at 35 37°C and 5% CO_2 . After 24 hours, FCS supplementation is reduced to 10%. On day six, oligodendrocytes and microglia are removed by strongly tapping the sides of the flasks. One day following this purification step, secondary astrocyte cultures are established by subplating onto 96 poly-D-lysine precoated T175 flasks (BIOCOAT) at a density of 65,000 cells/well in DMEM and 10% FCS. After 24 hours, the astrocytes are washed with serum free medium and then cultured in DMEM, without glutamate, supplemented with 0.5% FCS, 20 mM HEPES, 10 ng/mL epidermal growth factor ("EGF"), 40 1 mM sodium pyruvate, and 1X penicillin/streptomycin at pH 7.5 for 3 to 5 days at 37°C and 5% CO_2 . The procedure allows the expression of the mGluR5 receptor by astrocytes, as demonstrated by S. Miller et al., J. Neuroscience 15(9): 6103-6109 (1995).

[0481] Assay Protocol: After 3-5 days incubation with EGF, the astrocytes are washed with 127 mM NaCl, 5 mM KCl, 2 mM MgCl_2 , 700 mM NaH_2PO_4 , 2 mM CaCl_2 , 5 mM NaHCO_3 , 8 mM HEPES, 10 mM Glucose at pH 7.4 ("Assay Buffer") and loaded with the dye Fluo-4 (commercially available from Molecular Probes Inc. of Eugene, OR) using 0.1 mL of Assay Buffer containing Fluo-4 (3 mM final). After 90 minutes of dye loading, the cells are then washed twice with 0.2 mL Assay Buffer and resuspended in 0.1 mL of Assay Buffer. The plates containing the astrocytes are then transferred to a Fluorometric Imaging Plate reader ("FLIPR," commercially available from Molecular Devices Corporation of Sunnyvale, CA) for the assessment of calcium mobilization flux in the presence of glutamate and in the presence or absence of antagonist. After monitoring fluorescence for 15 seconds to establish a baseline, DMSO solutions containing various concentrations of a Pyridylene Compound diluted in Assay Buffer (0.05 mL of 4X dilutions for competition curves) are added to the cell plate and fluorescence is monitored for 2 minutes. 0.05 mL of a 4X glutamate solution (agonist) is then added to each well to provide a final glutamate concentration in each well of 10 mM. Plate fluorescence is then monitored for an additional 60 seconds after agonist addition. The final DMSO concentration in the assay is 1.0%. In each experiment, 55 fluorescence is monitored as a function of time and the data analyzed using Microsoft Excel and GraphPad Prism. Dose-response curves are fit using a non-linear regression to determine the IC_{50} value. In each experiment, each data point is determined two times.

5.4 EXAMPLE 4: IN VIVO ASSAYS FOR PREVENTION OR TREATMENT OF PAIN

[0482] Test Animals: Each experiment uses rats weighing between 200-260 g at the start of the experiment. The rats are group-housed and have free access to food and water at all times, except prior to oral administration of a Pyridylene Compound when food is removed for 16 hours before dosing. A control group acts as a comparison to rats treated with a Pyridylene Compound. The control group is administered the carrier for the Pyridylene Compound. The volume of carrier administered to the control group is the same as the volume of carrier and Pyridylene Compound administered to the test group.

[0483] Acute Pain: To assess the actions of the Pyridylene Compounds for the treatment or prevention of acute pain, the rat tail flick test can be used. Rats are gently restrained by hand and the tail exposed to a focused beam of radiant heat at a point 5 cm from the tip using a tail flick unit (Model 7360, commercially available from Ugo Basile of Italy). Tail flick latencies are defined as the interval between the onset of the thermal stimulus and the flick of the tail. Animals not responding within 20 seconds are removed from the tail flick unit and assigned a withdrawal latency of 20 seconds. Tail flick latencies are measured immediately before (pre-treatment) and 1, 3, and 5 hours following administration of a Pyridylene Compound. Data are expressed as tail flick latency(s) and the percentage of the maximal possible effect (% MPE), *i.e.*, 20 seconds, is calculated as follows:

$$\% \text{ MPE} = \frac{[(\text{post administration latency}) - (\text{pre-administration latency})]}{(20 \text{ s pre-administration latency})} \times 100$$

[0484] The rat tail flick test is described in F.E. D'Amour et al., "A Method for Determining Loss of Pain Sensation," J. Pharmacol. Exp. Ther. 72:74-79 (1941).

[0485] Acute pain can also be assessed by measuring the animal's response to noxious mechanical stimuli by determining the paw withdrawal threshold ("PWT"), as described below.

[0486] Inflammatory Pain: To assess the actions of the Pyridylene Compounds for the treatment or prevention of inflammatory pain, the Freund's complete adjuvant ("FCA") model of inflammatory pain is used. FCA-induced inflammation of the rat hind paw is associated with the development of persistent inflammatory mechanical hyperalgesia and provides reliable prediction of the anti-hyperalgesic action of clinically useful analgesic drugs (L. Bartho et al., "Involvement of Capsaicin-sensitive Neurones in Hyperalgesia and Enhanced Opioid Antinociception in Inflammation," Naunyn-Schmiedeberg's Archives of Pharmacol. 342:666-670 (1990)). The left hind paw of each animal is administered a 50 μ L intraplantar injection of 50% FCA. 24 hour post injection, the animal is assessed for response to noxious mechanical stimuli by determining the PWT, as described below. Rats are then administered a single injection of 1, 3, 10 or 30 mg/kg of either a Pyridylene Compound; 30 mg/kg of a control selected from Celebrex, indomethacin or naproxen; or carrier. Responses to noxious mechanical stimuli are then determined 1, 3, 5 and 24 hours post administration. Percentage reversal of hyperalgesia for each animal is defined as:

$$\% \text{ Reversal} = \frac{[(\text{post administration PWT}) - (\text{pre-administration PWT})]}{[(\text{baseline PWT}) - (\text{pre-administration PWT})]} \times 100$$

[0487] Neuropathic Pain: To assess the actions of the Pyridylene Compounds for the treatment or prevention of neuropathic pain, either the Seltzer model or the Chung model can be used.

[0488] In the Seltzer model, the partial sciatic nerve ligation model of neuropathic pain is used to produce neuropathic hyperalgesia in rats (Z. Seltzer et al., "A Novel Behavioral Model of Neuropathic Pain Disorders Produced in Rats by Partial Sciatic Nerve Injury," Pain 43:205-218 (1990)). Partial ligation of the left sciatic nerve is performed under isoflurane/PO₂ inhalation anaesthesia. Following induction of anesthesia, the left thigh of the rat is shaved and the sciatic nerve exposed at high thigh level through a small incision and is carefully cleared of surrounding connective tissues at a site near the trochanter just distal to the point at which the posterior biceps semitendinosus nerve branches off of the common sciatic nerve. A 7-0 silk suture is inserted into the nerve with a 3/8 curved, reversed-cutting mini-needle and

tightly ligated so that the dorsal 1/3 to 1/2 of the nerve thickness is held within the ligature. The wound is closed with a single muscle suture (4-0 nylon (Vicryl)) and vetbond tissue glue. Following surgery, the wound area is dusted with antibiotic powder. Sham-treated rats undergo an identical surgical procedure except that the sciatic nerve is not manipulated. Following surgery, animals are weighed and placed on a warm pad until they recover from anesthesia. Animals are then returned to their home cages until behavioral testing begins. The animal is assessed for response to noxious mechanical stimuli by determining PWT, as described below, prior to surgery (baseline), then immediately prior to and 1, 3, and 5 hours after drug administration for rear paw of the animal. Percentage reversal of neuropathic hyperalgesia is defined as:

$$\% \text{ Reversal} = \frac{[(\text{post administration PWT}) - (\text{pre-administration PWT})]}{[(\text{baseline PWT}) - (\text{pre-administration PWT})]} \times 100$$

In the Chung model, the spinal nerve ligation model of neuropathic pain is used to produce mechanical hyperalgesia, thermal hyperalgesia and tactile allodynia in rats. Surgery is performed under isoflurane/O₂ inhalation anaesthesia. Following induction of anaesthesia, a 3 cm incision is made and the left paraspinal muscles are separated from the spinous process at the L₄ - S₂ levels. The L₆ transverse process is carefully removed with a pair of small rongeurs to identify visually the L₄ - L₆ spinal nerves. The left L₅ (or L₅ and L₆) spinal nerve(s) is isolated and tightly ligated with silk thread. A complete hemostasis is confirmed and the wound is sutured using non-absorbable sutures, such as nylon sutures or stainless steel staples. Sham-treated rats undergo an identical surgical procedure except that the spinal nerve (s) is not manipulated. Following surgery animals are weighed, administered a subcutaneous (s.c.) injection of saline or ringers lactate, the wound area is dusted with antibiotic powder and they are kept on a warm pad until they recover from the anesthesia. Animals are then returned to their home cages until behavioral testing begins. The animals are assessed for response to noxious mechanical stimuli by determining PWT, as described below, prior to surgery (baseline), then immediately prior to and 1, 3, and 5 hours after being administered a Pyridylene Compound for the left rear paw of the animal. The animal can also be assessed for response to noxious thermal stimuli or for tactile allodynia, as described below. The Chung model for neuropathic pain is described in S.H. Kim, "An Experimental Model for Peripheral Neuropathy Produced by Segmental Spinal Nerve Ligation in the Rat," Pain 50(3):355-363 (1992).

[0489] Response to Mechanical Stimuli as an Assessment of Mechanical Hyperalgesia: The paw pressure assay can be used to assess mechanical hyperalgesia. For this assay, hind paw withdrawal thresholds (PWT) to a noxious mechanical stimulus are determined using an analgesymeter (Model 7200, commercially available from Ugo Basile of Italy) as described in C. Stein, "Unilateral Inflammation of the Hindpaw in Rats as a Model of Prolonged Noxious Stimulation: Alterations in Behavior and Nociceptive Thresholds," Pharmacol. Biochem. and Behavior 31:451-455 (1988). The maximum weight that can be applied to the hind paw is set at 250 g and the end point is taken as complete withdrawal of the paw. PWT is determined once for each rat at each time point and only the affected (ipsilateral) paw is tested.

[0490] Response to Thermal Stimuli as an Assessment of Thermal Hyperalgesia: The plantar test can be used to assess thermal hyperalgesia. For this test, hind paw withdrawal latencies to a noxious thermal stimulus are determined using a plantar test apparatus (commercially available from Ugo Basile of Italy) following the technique described by K. Hargreaves et al., "A New and Sensitive Method for Measuring Thermal Nociception in Cutaneous Hyperalgesia," Pain 32(1):77-88 (1988). The maximum exposure time is set at 32 seconds to avoid tissue damage and any directed paw withdrawal from the heat source is taken as the end point. Three latencies are determined at each time point and averaged. Only the affected (ipsilateral) paw is tested.

[0491] Assessment of Tactile Allodynia: To assess tactile allodynia, rats are placed in clear, plexiglass compartments with a wire mesh floor and allowed to habituate for a period of at least 15 minutes. After habituation, a series of von Frey monofilaments are presented to the plantar surface of the left (operated) foot of each rat. The series of von Frey monofilaments consists of six monofilaments of increasing diameter, with the smallest diameter fiber presented first. Five trials are conducted with each filament with each trial separated by approximately 2 minutes. Each presentation lasts for a period of 4-8 seconds or until a nociceptive withdrawal behavior is observed. Flinching, paw withdrawal or licking of the paw are considered nociceptive behavioral responses.

5.5 EXAMPLE 5: IN VIVO ASSAYS FOR PREVENTION OR TREATMENT OF ANXIETY

[0492] The elevated plus maze test or the shock-probe burying test can be used to assess the anxiolytic activity of

Pyridylene Compounds in rats or mice.

[0493] The Elevated Plus Maze Test: The elevated plus maze consists of a platform with 4 arms, two open and two closed (50 x 10 x 50 cm enclosed with an open roof). Rats (or mice) are placed in the center of the platform, at the crossroad of the 4 arms, facing one of the closed arms. Time spent in the open arms vs the closed arms and number of open arm entries during the testing period are recorded. This test is conducted prior to drug administration and again after drug administration. Test results are expressed as the mean time spent in open arms and the mean number of entries into open arms. Known anxiolytic drugs increase both the time spent in open arms and number of open arm entries. The elevated plus maze test is described in D. Treit, "Animal Models for the Study of Anti-anxiety Agents: A Review," *Neuroscience & Biobehavioral Reviews* 9(2):203-222 (1985).

[0494] The Shock-Probe Burying Test: For the shock-probe burying test the testing apparatus consists of a plexiglass box measuring 40 x 30 x 40 cm, evenly covered with approximately 5 cm of bedding material (odor absorbent kitty litter) with a small hole in one end through which a shock probe (6.5 cm long and 0.5 cm in diameter) is inserted. The plexiglass shock probe is helically wrapped with two copper wires through which an electric current is administered. The current is set at 2 mA. Rats are habituated to the testing apparatus for 30 min on 4 consecutive days without the shock probe in the box. On test day, rats are placed in one corner of the test chamber following drug administration. The probe is not electrified until the rat touches it with its snout or fore paws, at which point the rat receives a brief 2 mA shock. The 15 min testing period begins once the rat receives its first shock and the probe remains electrified for the remainder of the testing period. The shock elicits burying behavior by the rat. Following the first shock, the duration of time the rat spends spraying bedding material toward or over the probe with its snout or fore paws (burying behavior) is measured as well as the number of contact-induced shocks the rat receives from the probe. Known anxiolytic drugs reduce the amount of burying behavior. In addition, an index of the rat's reactivity to each shock is scored on a 4 point scale. The total time spent immobile during the 15 min testing period is used as an index of general activity. The shock-probe burying test is described in D. Treit, 1985, *supra*.

5.6 EXAMPLE 6: *IN VIVO* ASSAYS FOR PREVENTION OR TREATMENT OF AN ADDICTIVE DISORDER

[0495] The conditioned place preference test or drug self-administration test can be used to assess the ability of Pyridylene Compounds to attenuate the rewarding properties of known drugs of abuse.

[0496] The Conditioned Place Preference Test: The apparatus for the conditioned place preference test consists of two large compartments (45 x 45 x 30 cm) made of wood with a plexiglass front wall. These two large compartments are distinctly different. Doors at the back of each large compartment lead to a smaller box (36 x 18 x 20 cm) made of wood, painted grey, with a ceiling of wire mesh. The two large compartments differ in terms of shading (white vs black), level of illumination (the plexiglass door of the white compartment is covered with aluminum foil except for a window of 7 x 7 cm), texture (the white compartment has a 3 cm thick floor board (40 x 40 cm) with nine equally spaced 5 cm diameter holes and the black has a wire mesh floor), and olfactory cues (saline in the white compartment and 1 mL of 10% acetic acid in the black compartment). On habituation and testing days, the doors to the small box remain open, giving the rat free access to both large compartments.

[0497] The first session that a rat is placed in the apparatus is a habituation session and entrances to the smaller grey compartment remain open giving the rat free access to both large compartments. During habituation, rats generally show no preference for either compartment. Following habituation, rats are given 6 conditioning sessions. Rats are divided into 4 groups: carrier pre-treatment + carrier (control group), Pyridylene Compound pre-treatment + carrier, carrier pre-treatment + morphine, Pyridylene Compound pre-treatment + morphine. During each conditioning session the rat is injected with one of the drug combinations and confined to one compartment for 30 min. On the following day, the rat receives a carrier + carrier treatment and is confined to the other large compartment. Each rat receives three conditioning sessions consisting of 3 drug combination-compartment and 3 carrier-compartment pairings. The order of injections and the drug/compartment pairings are counterbalanced within groups. On the test day, rats are injected prior to testing (30 min to 1 hour) with either morphine or carrier and the rat is placed in the apparatus, the doors to the grey compartment remain open and the rat is allowed to explore the entire apparatus for 20 min. The time spent in each compartment is recorded. Known drugs of abuse increase the time spent in the drug-paired compartment during the testing session. If the Pyridylene Compound blocks or reduces the acquisition of morphine conditioned place preference (reward), there will be no difference or less of a difference in time spent in each side in rats pre-treated with a Pyridylene Compound and the group will not be different from the group of rats that was given carrier + carrier in both compartments. Data will be analyzed as time spent in each compartment (drug combination-paired vs carrier-paired). Generally, the experiment is repeated with a minimum of 3 doses of a Pyridylene Compound.

[0498] The Drug Self-Administration Test: The apparatus for the drug self-administration test is a standard commercially available operant conditioning chamber. Before drug trials begin rats are trained to press a lever for a food reward. After stable lever pressing behavior is acquired, rats are tested for acquisition of lever pressing for drug reward. Rats are implanted with chronically indwelling jugular catheters for i.v. administration of compounds and are allowed to recover

for 7 days before training begins. Experimental sessions are conducted daily for 5 days in 3 hour sessions. Rats are trained to self-administer a known drug of abuse, such as morphine. Rats are then presented with two levers, an "active" lever and an "inactive" lever. Pressing of the active lever results in drug infusion on a fixed ratio 1 (FR1) schedule (*i.e.*, one lever press gives an infusion) followed by a 20 second time out period (signaled by illumination of a light above the levers). Pressing of the inactive lever results in infusion of excipient. Training continues until the total number of morphine infusions stabilizes to within $\pm 10\%$ per session. Trained rats are then used to evaluate the effect of Pyridylene Compounds pre-treatment on drug self-administration. On test day, rats are pre-treated with a Pyridylene Compound or excipient and then are allowed to self-administer drug as usual. If the Pyridylene Compound blocks or reduces the rewarding effects of morphine, rats pre-treated with the Pyridylene Compound will show a lower rate of responding compared to their previous rate of responding and compared to excipient pre-treated rats. Data are analyzed as the change in number of drug infusions per testing session (number of infusions during test session - number of infusions during training session).

5.7 EXAMPLE 7: FUNCTIONAL ASSAY FOR CHARACTERIZING mGluR1 ANTAGONISTIC PROPERTIES

[0499] Functional assays for the characterization of mGluR 1 antagonistic properties are known in the art. For example, the following procedure can be used.

[0500] A CHO-rat mGluR1 cell line is generated using cDNA encoding rat mGluR1 receptor (M. Masu and S. Nakanishi, Nature 349: 760-765 (1991)). The cDNA encoding rat mGluR1 receptor can be obtained from, *e.g.*, Prof. S. Nakanishi (Kyoto, Japan).

[0501] 40,000 CHO-rat mGluR1 cells/well are plated into a Costar 3409, black, clear bottom, 96 well, tissue culture treated plate (commercially available from Fisher Scientific of Chicago, IL) and are incubated in Dulbecco's Modified Eagle's Medium (DMEM, pH 7.4) supplemented with glutamine, 10% FBS, 1% Pen/Strep, and 500 $\mu\text{g}/\text{mL}$ Geneticin for about 12 h. The CHO-rat mGluR1 cells are then washed and treated with Optimem medium (commercially available from Invitrogen, Carlsbad, CA) and incubated for a time period ranging from 1 to 4 hours prior to loading the cells with the dye Fluo-4. After incubation, the cell plates are washed with loading buffer (127 mM NaCl, 5 mM KCl, 2 mM MgCl_2 , 700 μM , NaH_2PO_4 , 2 mM CaCl_2 , 5 mM NaHCO_3 , 8 mM HEPES, and 10 mM glucose, pH 7.4) and incubated with 3 μM Fluo-4 in 0.1 mL loading buffer for 90 min. The cells are then washed twice with 0.2 mL loading buffer, resuspended in 0.1 mL of loading buffer, and transferred to a FLIPR for measurement of calcium mobilization flux in the presence of glutamate and in the presence or absence of a Pyridylene Compound.

[0502] To measure calcium mobilization flux, fluorescence is monitored for about 15 s to establish a baseline and DMSO solutions containing various concentrations of a Pyridylene Compound ranging from about 50 μM to about 0.8 nM diluted in loading buffer (0.05 mL of a 4X dilution) are added to the cell plate and fluorescence is monitored for about 2 min. 0.05 mL of a 4X Glutamate solution (agonist) is then added to each well to provide a final glutamate concentration in each well of 10 μM and fluorescence is monitored for about 1 additional min. The final DMSO concentration in the assay is 1%. In each experiment fluorescence is monitored as a function of time and the data is analyzed using a non-linear regression to determine the IC_{50} value. In each experiment each data point is determined twice.

5.8 EXAMPLE 8: BINDING OF PYRIDYLENE COMPOUNDS TO VR1

[0503] Methods for assaying compounds capable of inhibiting VR1 are known to those skilled in the art, for example, those methods disclosed in U.S. Patent No. 6,239,267 to Duckworth *et al.*; U.S. Patent No. 6,406,908 to McIntyre *et al.*; or U.S. Patent No. 6,335,180 to Julius *et al.*

Binding of Compound E35(a) to VR1: Assay Protocol

[0504] Human VR1 Cloning: Human spinal cord RNA (commercially available from Clontech, Palo Alto, CA) was used. Reverse transcription was conducted on 1.0 μg total RNA using Thermoscript Reverse Transcriptase (commercially available from Invitrogen) and oligo dT primers as detailed in its product description. Reverse transcription reactions were incubated at 55°C for 1 h, heat-inactivated at 85°C for 5 min, and RNase H-treated at 37°C for 20 min.

[0505] Human VR1 cDNA sequence was obtained by comparison of the human genomic sequence, prior to annotation, to the published rat sequence. Intron sequences were removed and flanking exonic sequences were joined to generate the hypothetical human cDNA. Primers flanking the coding region of human VR1 were designed as follows: forward primer, GAAGATCTTCGCTGGTTGCACACTGGGCCACA; and reverse primer, GAAGATCTTCGGGACAGTGACGTTGGATGT.

[0506] PCR of VR1 was performed on one tenth of the Reverse transcription reaction mixture using Expand Long Template Polymerase and Expand Buffer 2 in a final volume of 50 μL according to the manufacturer's instructions (Roche Applied Sciences, Indianapolis, IN). After denaturation at 94°C for 2 min, PCR amplification was performed for

25 cycles at 94°C for 15 sec, 58°C for 30 sec, and 68°C for 3 min followed by a final incubation at 72°C for 7 min to complete the amplification. A PCR product of ~2.8 kb was gel-isolated using a 1.0% agarose, Tris-Acetate gel containing 1.6 µg/mL of crystal violet and purified with a S.N.A.P. UV-Free Gel Purification Kit (commercially available from Invitrogen). The VR1 PCR product was cloned into the pIND/V5-His-TOPO vector (commercially available from Invitrogen) according to the manufacturer's instructions. DNA preparations, restriction enzyme digestions, and preliminary DNA sequencing were performed according to standard protocols. Full-length sequencing confirmed the identity of the human VR1.

[0507] Generation of Inducible Cell Lines: Unless noted otherwise, cell culture reagents were purchased from Life Technologies of Rockville, MD. HEK 293-EcR cells expressing the ecdysone receptor (commercially available from Invitrogen) were cultured in Growth Medium (Dulbecco's Modified Eagles Medium containing 10% fetal bovine serum (commercially available from HYCLONE, Logan, UT), 1x penicillin/streptomycin, 1x glutamine, 1 mM sodium pyruvate and 400 µg/mL Zeocin (commercially available from Invitrogen)). The VR1-pIND constructs were transfected into the HEK293-EcR cell line using Fugene transfection reagent (commercially available from Roche Applied Sciences, Basel, Switzerland). After 48 h, cells were transferred to Selection Medium (Growth Medium containing 300 µg/mL G418 (commercially available from Invitrogen)). Approximately 3 weeks, later individual Zeocin/G418 resistant colonies were isolated and expanded. To identify functional clones, multiple colonies were plated into 96-well plates and expression was induced for 48 h using Selection Medium supplemented with 5 µM ponasterone A ("PonA") (commercially available from Invitrogen). On the day of assay, cells were loaded with Fluo-4 (a calcium-sensitive dye that is commercially available from Molecular Probes) and CAP-mediated calcium influx was measured using a FLIPR as described below. Functional clones were re-assayed, expanded, and cryopreserved.

[0508] pH-Based Assay: Two days prior to performing this assay, cells were seeded on poly-D-lysine-coated 96-well clear-bottom black plates (commercially available from Becton-Dickinson) at 75,000 cells/well in growth media containing 5 µM PonA to induce expression. On the day of the assay, the plates were washed with 0.2 mL 1x Hank's Balanced Salt Solution (commercially available from Life Technologies) containing 1.6 mM CaCl₂ and 20 mM HEPES, pH 7.4 ("wash buffer"), and loaded using 0.1 mL of wash buffer containing Fluo-4 (3 µM final concentration, commercially available from Molecular Probes). After 1 h, the cells were washed twice with 0.2 mL wash buffer and resuspended in 0.05 mL 1x Hank's Balanced Salt Solution containing 3.5 mM CaCl₂ and 10 mM Citrate, pH 7.4 ("assay buffer"). Plates were then transferred to a FLIPR for assay. Compound E35(a) was diluted in assay buffer, and 50 µL of the resultant solution were added to the cell plates and the solution monitored for two minutes. The final concentration of Compound **E35(a)** ranged from about 50 pM to about 3 µM. Agonist buffer (wash buffer titrated with 1N HCl to provide a solution having a pH of 5.5 when mixed 1:1 with assay buffer) (0.1 mL) was then added to each well, and the plates were incubated for 1 additional minute. Data were collected over the entire time course and analyzed using Excel and Graph Pad Prism. Compound E35(a) when assayed according to this protocol had an IC₅₀ of 825.5 ± 247.8 nM (n = 4).

[0509] Capsaicin-Based Assay: Two days prior to performing this assay, cells were seeded in poly-D-lysine-coated 96-well clear-bottom black plates (50,000 cells/well) in growth media containing 5 µM PonA to induce expression. On the day of the assay, the plates were washed with 0.2 mL 1x Hank's Balanced Salt Solution containing 1 mM CaCl₂ and 20 mM HEPES, pH 7.4, and cells were loaded using 0.1 mL of wash buffer containing Fluo-4 (3 µM final). After one hour, the cells were washed twice with 0.2 mL of wash buffer and resuspended in 0.1 mL of wash buffer. The plates were transferred to a FLIPR for assay. 50 µL of Compound **E35(a)** diluted with assay buffer were added to the cell plates and incubated for 2 min. The final concentration of Compound **E35(a)** ranged from about 50 pM to about 3 µM. Human VR1 was activated by the addition of 50 µL of capsaicin (400 nM), and the plates were incubated for an additional 3 min. Data were collected over the entire time course and analyzed using Excel and GraphPad Prism. Compound **E35(a)** when assayed according to this protocol had an IC₅₀ of 65.5 ± 17.3 nM (n = 3).

[0510] The results of the pH-based assay and the capsaicin-based assay demonstrate that Compound **E35(a)**, an illustrative Pyridylene Compound, binds to and modulates the activity of human VR1 and accordingly is useful for treating or preventing pain, UI, an ulcer, IBD, or IBS in an animal.

[0511] The present invention is not to be limited in scope by the specific embodiments disclosed in the examples which are intended as illustrations of a few aspects of the invention and any embodiments that are functionally equivalent are within the scope of this invention. Indeed, various modifications of the invention in addition to those shown and described herein will become apparent to those skilled in the art and are intended to fall within the scope of the appended claims.

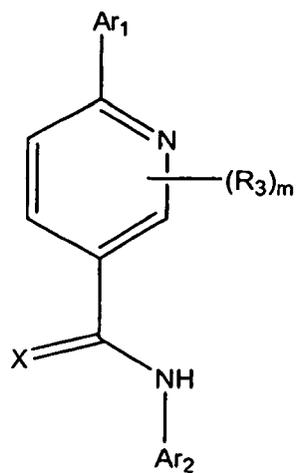
Claims

1. A compound of formula:

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(I)

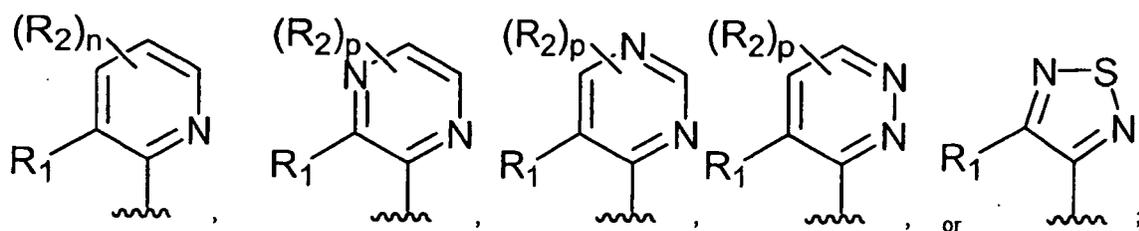
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or a pharmaceutically acceptable salt thereof, wherein:

Ar₁ is

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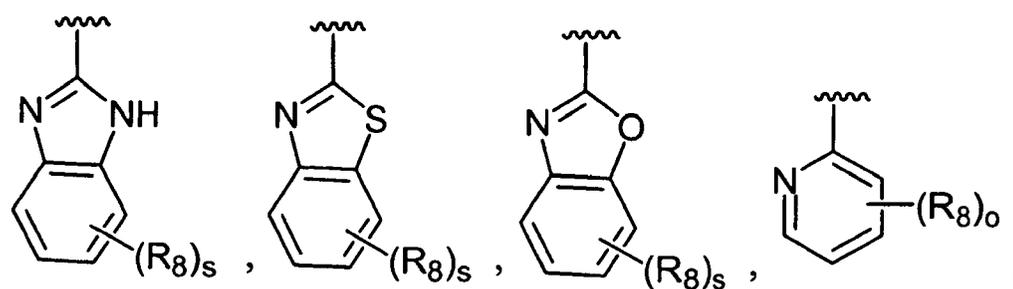


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Ar₂ is

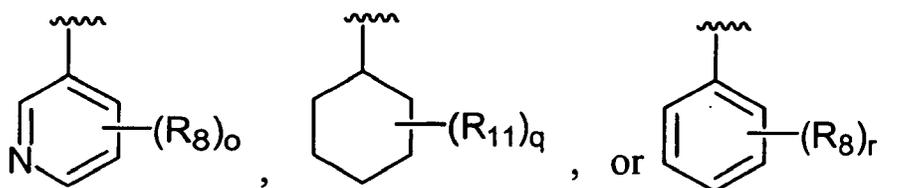
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X is O or S;

R₁ is -halo, -CH₃, -C(halo)₃, -CH(halo)₂, or -CH₂(halo);

each R₂ is independently:

(a) -halo, -OH, -NH₂, -CN, or -NO₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered) heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups; or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered)heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₃ is independently:

(a) -halo, -CN, -OH, -NO₂, or -NH₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered) heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups; or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered) heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₅ is independently -CN, -OH, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₆ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₇ is independently -H, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, or CH₂(halo);

each R₈ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₁₁ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each halo is independently -F, -Cl, -Br, or -I;

m is an integer ranging from 0 to 3;

n is an integer ranging from 0 to 3;

o is an integer ranging from 0 to 4;

p is an integer ranging from 0 to 2;

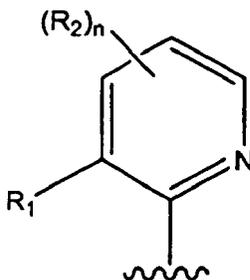
q is an integer ranging from 0 to 6;

r is an integer ranging from 0 to 5; and

s is an integer ranging from 0 to 4.

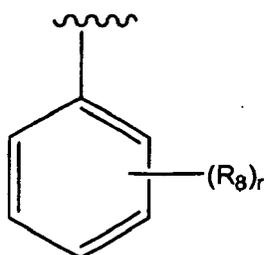
2. The compound of claim 1, wherein:

Ar₁ is



Ar₂ is

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X is O; and
R₁ is -CH₃.

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3. The compound of claim 2, wherein:

m is 0;

n is 0;

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r is 1; and

R₈ is -(C₁-C₆)alkyl or -CF₃.

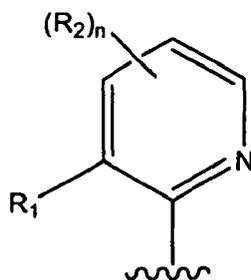
4. The compound of claim 3, wherein the -(C₁-C₆)alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar₂.

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5. The compound of claim 1, wherein:

Ar₁ is

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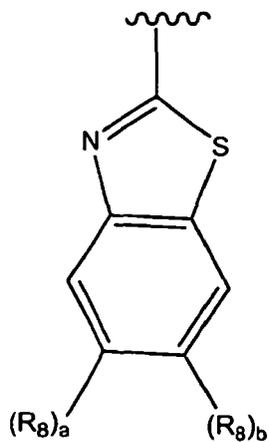


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Ar₂ is

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X is O;

R₁ is -CH₃, -CF₃, -Cl, -Br, -I, or -F;

m is 0;

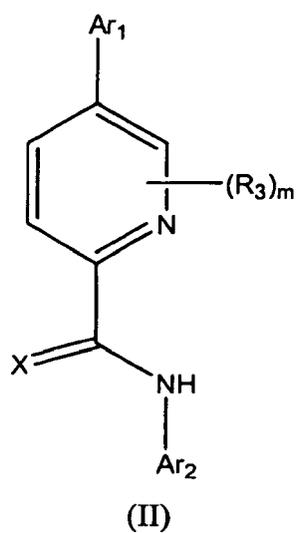
n is 0;

(R₈)_a is -H; and

(R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

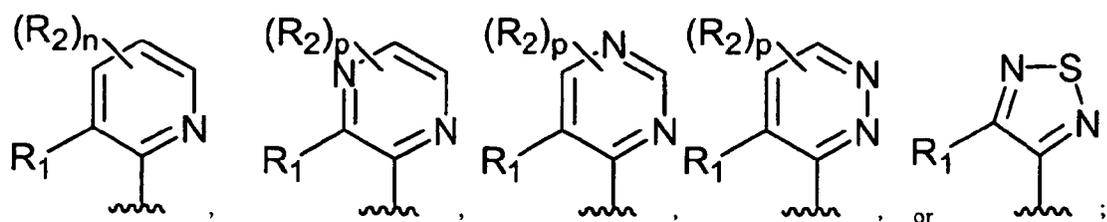
6. The compound of claim 5, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

7. A compound of formula:

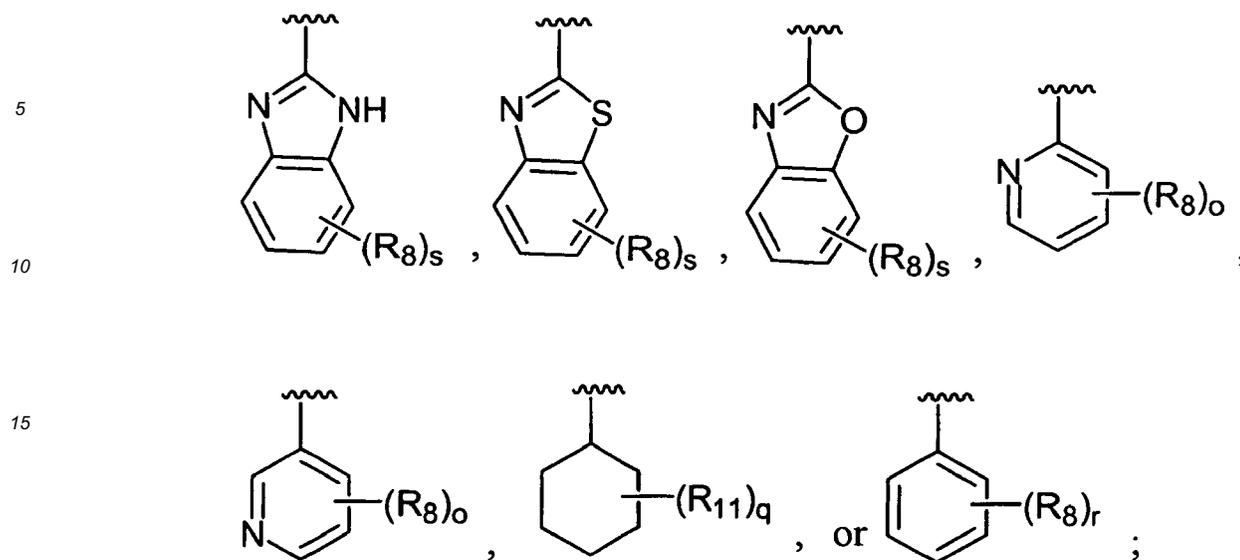


or a pharmaceutically acceptable salt thereof, wherein:

Ar₁ is



Ar₂ is



X is O or S;

R₁ is -halo, -CH₃, -C(halo)₃, -CH(halo)₂, or -CH₂(halo);

each R₂ is independently:

(a) -halo, -OH, -NH₂, -CN, or -NO₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered) heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups; or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered)heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₃ is independently:

(a) -halo, -CN, -OH, -NO₂, or -NH₂;

(b) -(C₁-C₁₀)alkyl, -(C₂-C₁₀)alkenyl, -(C₂-C₁₀)alkynyl, -(C₃-C₁₀)cycloalkyl, -(C₈-C₁₄)bicycloalkyl, -(C₈-C₁₄)tricycloalkyl, -(C₅-C₁₀)cycloalkenyl, -(C₈-C₁₄)bicycloalkenyl, -(C₈-C₁₄)tricycloalkenyl, -(3- to 7-membered) heterocycle, or -(7- to 10-membered)bicycloheterocycle, each of which is unsubstituted or substituted with one or more R₅ groups; or

(c) -phenyl, -naphthyl, -(C₁₄)aryl or -(5- to 10-membered) heteroaryl, each of which is unsubstituted or substituted with one or more R₆ groups;

each R₅ is independently -CN, -OH, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₆ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₇ is independently -H, -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -(3- to 5-membered)heterocycle, -C(halo)₃, -CH(halo)₂, or CH₂(halo);

each R₈ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

each R₁₁ is independently -(C₁-C₆)alkyl, -(C₂-C₆)alkenyl, -(C₂-C₆)alkynyl, -(C₃-C₈)cycloalkyl, -(C₅-C₈)cycloalkenyl, -phenyl, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, or -S(O)₂R₇;

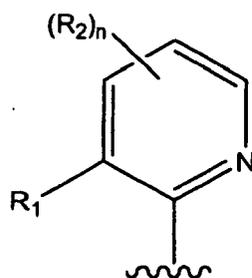
each halo is independently -F, -Cl, -Br, or -I;

m is an integer ranging from 0 to 3;

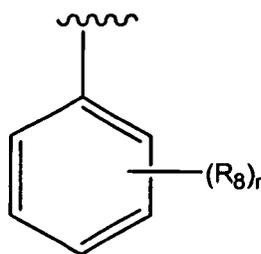
n is an integer ranging from 0 to 3;
 o is an integer ranging from 0 to 4;
 p is an integer ranging from 0 to 2;
 q is an integer ranging from 0 to 6;
 r is an integer ranging from 0 to 5; and
 s is an integer ranging from 0 to 4.

8. The compound of claim 7, wherein:

Ar₁ is



Ar₂ is



X is O; and
 R₁ is -CH₃.

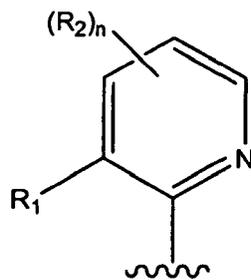
9. The compound of claim 8, wherein:

m is 0;
 n is 0;
 r is 1; and
 R₈ is -(C₁-C₆)alkyl or -CF₃.

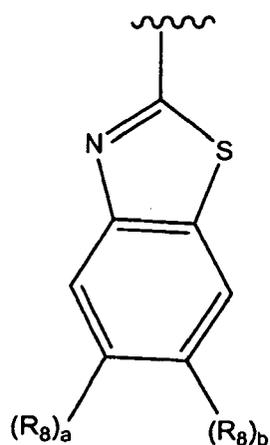
10. The compound of claim 9, wherein the -(C₁-C₆)alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar₂.

11. The compound of claim 7, wherein:

Ar₁ is



Ar₂ is



X is O;

R₁ is -CH₃, -CF₃, -Cl, -Br, -I, or -F;

m is 0;

n is 0;

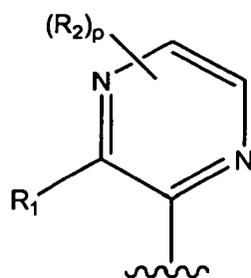
(R₈)_a is -H; and

(R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

12. The compound of claim 11, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

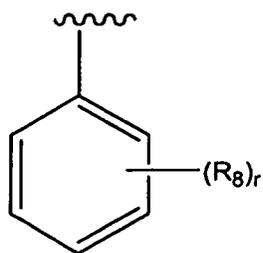
13. The compound of claim 1, wherein:

Ar₁ is



Ar₂ is

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X is O; and
 R_1 is $-\text{CH}_3$.

15 **14.** The compound of claim 13, wherein:

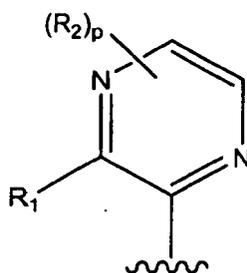
m is 0;
 p is 0;
 r is 1; and
 20 R_8 is $-(\text{C}_1\text{-C}_6)\text{alkyl}$ or $-\text{CF}_3$.

15. The compound of claim 14, wherein the $-(\text{C}_1\text{-C}_6)\text{alkyl}$ is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar_2 .

25 **16.** The compound of claim 1, wherein:

Ar_1 is

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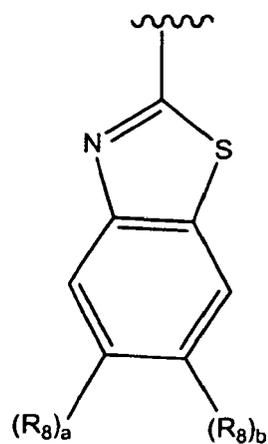


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Ar_2 is

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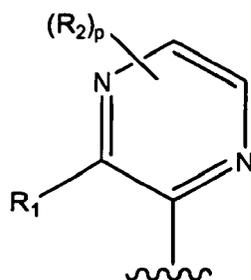
X is O;
 R₁ is -CH₃, -CF₃, -Cl, -Br, -I, or -F;
 m is 0;
 p is 0;
 5 (R₈)_a is -H; and
 (R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

17. The compound of claim 16, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

10 18. The compound of claim 7, wherein:

Ar₁ is

15

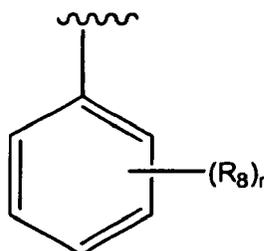


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Ar₂ is

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X is O; and
 R₁ is -CH₃.

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19. The compound of claim 18, wherein:

m is 0;
 p is 0;
 45 r is 1; and
 R₈ is -(C₁-C₆)alkyl or -CF₃.

20. The compound of claim 19, wherein the -(C₁-C₆)alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the para-position of Ar₂.

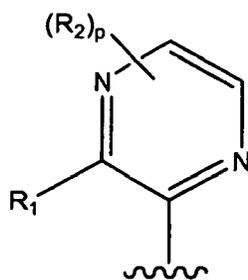
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21. The compound of claim 7, wherein:

Ar₁ is

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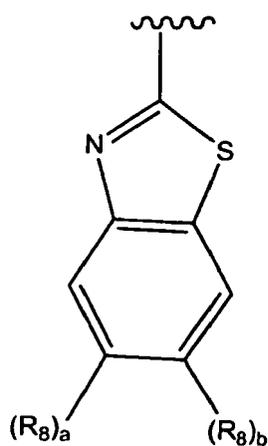
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Ar_2 is

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X is O;

R_1 is $-CH_3$, $-CF_3$, $-Cl$, $-Br$, $-I$, or $-F$;

m is 0;

p is 0;

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$(R_8)_a$ is $-H$; and

$(R_8)_b$ is $-H$, $-CH_3$, $-CF_3$, $-OCH_2CH_3$, *tert*-butyl, $-Cl$, $-Br$, $-I$, or $-F$.

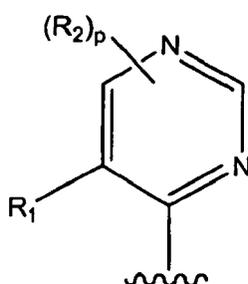
22. The compound of claim 21, wherein R_1 is $-CH_3$, $-CF_3$ or $-Cl$ and $(R_8)_b$ is $-Cl$, $-F$, $-CF_3$ or *tert*-butyl.

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23. The compound of claim 1, wherein:

Ar_1 is

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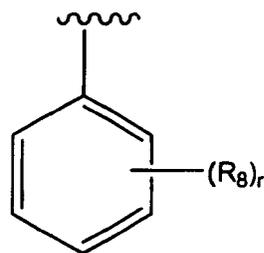


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Ar_2 is

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X is O; and
 R_1 is $-CH_3$.

15 **24.** The compound of claim 23, wherein:

m is 0;
 p is 0;
 r is 1; and
 R_8 is $-(C_1-C_6)$ alkyl or $-CF_3$.

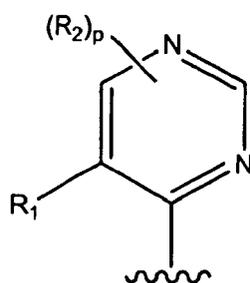
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25. The compound of claim 24, wherein the $-(C_1-C_6)$ alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar_2 .

25 **26.** The compound of claim 1, wherein:

Ar_1 is

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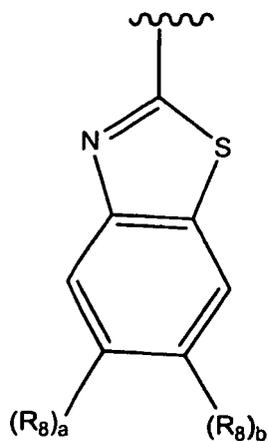


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Ar_2 is

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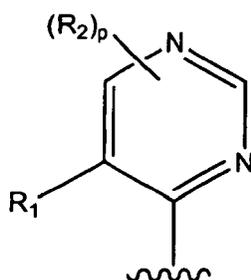
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X is O;
 R₁ is -CH₃, -CF₃, -Cl, -Br, -I, or -F;
 m is 0;
 p is 0;
 5 (R₈)_a is -H; and
 (R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

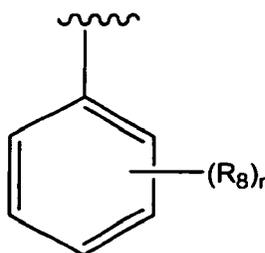
27. The compound of claim 26, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

10 28. The compound of claim 7, wherein:

Ar₁ is



25 Ar₂ is



X is O; and
 R₁ is -CH₃.

40 29. The compound of claim 28, wherein:

m is 0;
 p is 0;
 45 r is 1; and
 R₈ is -(C₁-C₆)alkyl or -CF₃.

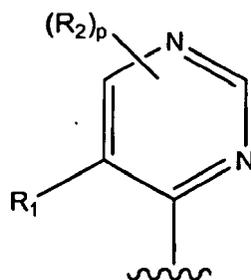
30. The compound of claim 29, wherein the -(C₁-C₆)alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar₂.

50 31. The compound of claim 7, wherein:

Ar₁ is

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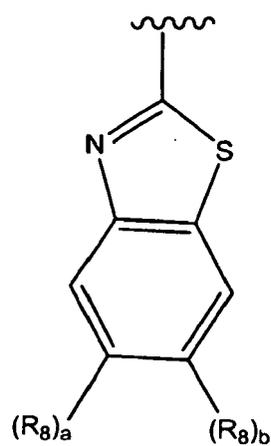
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Ar_2 is

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X is O;
 R_1 is $-CH_3$, $-CF_3$, $-Cl$, $-Br$, $-I$, or $-F$;
 m is 0;
 p is 0;
 $(R_8)_a$ is $-H$; and
 $(R_8)_b$ is $-H$, $-CH_3$, $-CF_3$, $-OCH_2CH_3$, *tert*-butyl, $-Cl$, $-Br$, $-I$, or $-F$.

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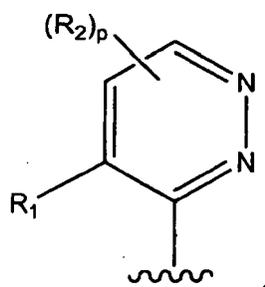
32. The compound of claim 31, wherein R_1 is $-CH_3$, $-CF_3$ or $-Cl$ and $(R_8)_b$ is $-Cl$, $-F$, $-CF_3$ or *tert*-butyl.

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33. The compound of claim 1, wherein:

Ar_1 is

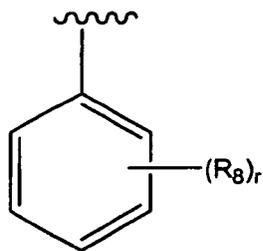
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Ar_2 is



X is O; and
R₁ is -CH₃.

15 **34.** The compound of claim 33, wherein:

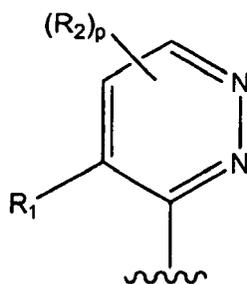
m is 0;
p is 0;
r is 1; and
R₈ is -(C₁-C₆)alkyl or -CF₃.

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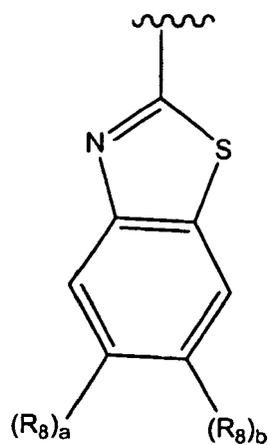
35. The compound of claim 34, wherein the -(C₁-C₆)alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar₂.

25 **36.** The compound of claim 1, wherein:

Ar₁ is



40 Ar₂ is



X is O;

R_1 is $-CH_3$, $-CF_3$, $-Cl$, $-Br$, $-I$, or $-F$;

m is 0;

p is 0;

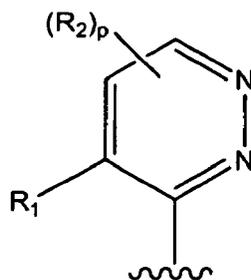
$(R_8)_a$ is $-H$; and

$(R_8)_b$ is $-H$, $-CH_3$, $-CF_3$, $-OCH_2CH_3$, *tert*-butyl, $-Cl$, $-Br$, $-I$, or $-F$.

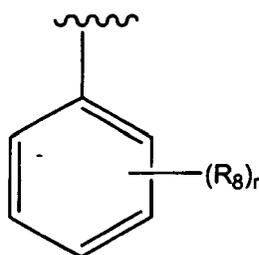
37. The compound of claim 36, wherein R_1 is $-CH_3$, $-CF_3$ or $-Cl$ and $(R_8)_b$ is $-Cl$, $-F$, $-CF_3$ or *tert*-butyl.

38. The compound of claim 7, wherein:

Ar_1 is



Ar_2 is



X is O ; and

R_1 is $-CH_3$.

39. The compound of claim 38, wherein:

m is 0;

p is 0;

r is 1; and

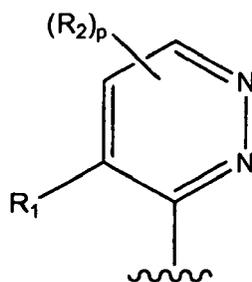
R_8 is $-(C_1-C_6)$ alkyl or $-CF_3$.

40. The compound of claim 39, wherein the $-(C_1-C_6)$ alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar_2 .

41. The compound of claim 7, wherein:

Ar_1 is

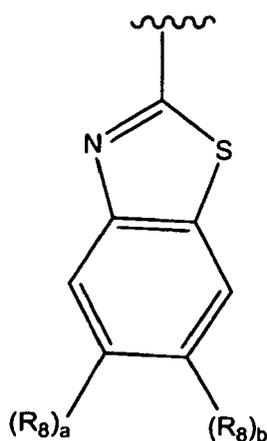
5



10

Ar₂ is

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X is O;
 R₁ is -CH₃, -CF₃, -Cl, -Br, -I, or -F;
 m is 0;
 p is 0;
 (R₈)_a is -H; and
 (R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

35

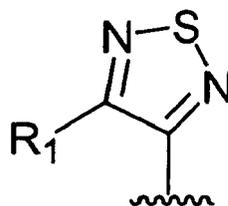
42. The compound of claim 41, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

43. The compound of claim 1, wherein:

40

Ar₁ is

45

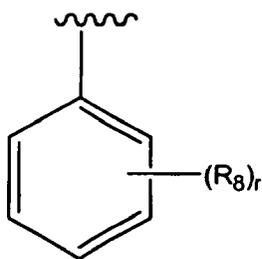


50

Ar₂ is

55

5



10

X is O; and
 R_1 is $-CH_3$.

15 **44.** The compound of claim 43, wherein:

m is 0;
 r is 1; and
 R_8 is $-(C_1-C_6)$ alkyl or $-CF_3$.

20

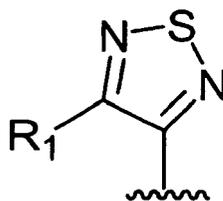
45. The compound of claim 44, wherein the $-(C_1-C_6)$ alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar_2 .

46. The compound of claim 1, wherein:

25

Ar_1 is

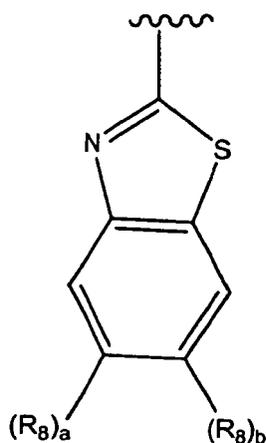
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35

Ar_2 is

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45

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X is O;
 R_1 is $-CH_3$, $-CF_3$, $-Cl$, $-Br$, $-I$, or $-F$;
 m is 0;

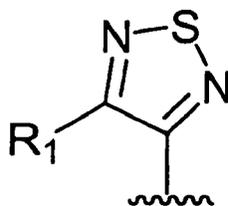
(R₈)_a is -H; and

(R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

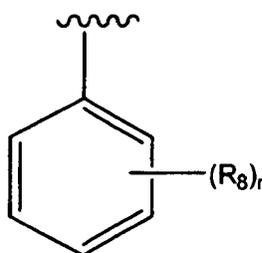
47. The compound of claim 46, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

48. The compound of claim 7, wherein:

Ar₁ is



Ar₂ is



X is O; and
R₁ is -CH₃.

49. The compound of claim 48, wherein:

m is 0;

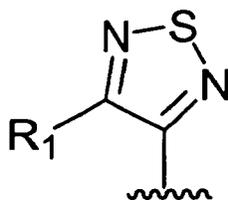
r is 1; and

R₈ is -(C₁-C₆)alkyl or -CF₃.

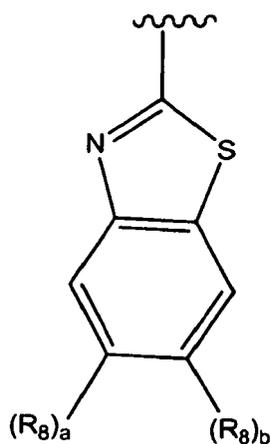
50. The compound of claim 49, wherein the -(C₁-C₆)alkyl is a *tert*-butyl group, the *tert*-butyl group preferably being substituted at the *para*-position of Ar₂.

51. The compound of claim 7, wherein:

Ar₁ is



Ar₂ is



20 X is O;

R₁ is -CH₃, -CF₃, -Cl, -Br, -I, or -F;

m is 0;

(R₈)_a is -H; and

(R₈)_b is -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyl, -Cl, -Br, -I, or -F.

25 **52.** The compound of claim 51, wherein R₁ is -CH₃, -CF₃ or -Cl and (R₈)_b is -Cl, -F, -CF₃ or *tert*-butyl.

53. A composition comprising the compound of claim 1 or claim 7 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable acceptable carrier or excipient.

30 **54.** Use of an effective amount of a compound of claim 1 or claim 7 or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for treating pain, urinary incontinence, an ulcer, irritable-bowel syndrome or inflammatory-bowel disease in an animal.

55. Use of a compound of claim 1 or claim 7 or a pharmaceutically acceptable salt thereof for the manufacture of a medicament for inhibiting VR1 function in a cell.

35 **56.** A method of inhibiting of VR1 function in a cell comprising contacting a cell capable of expressing VR1 with an effective amount of the compound of claim 1 or claim 7 or a pharmaceutically acceptable salt thereof, wherein the cell is not in direct contact with the human or animal body.

40 **57.** A kit comprising a container containing an effective amount of the compound of claim 1 or claim 7 or a pharmaceutically acceptable salt thereof.

58. A method for preparing a composition, comprising the step of admixing a compound of claim 1 or claim 7 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier or excipient.

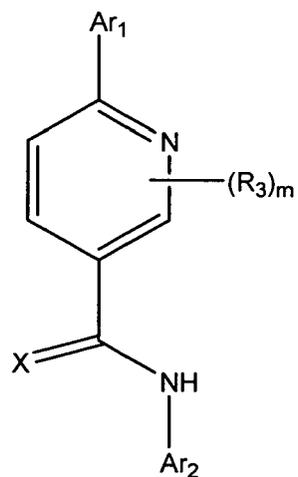
Patentansprüche

50 **1.** Eine Verbindung der Formel:

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(I)

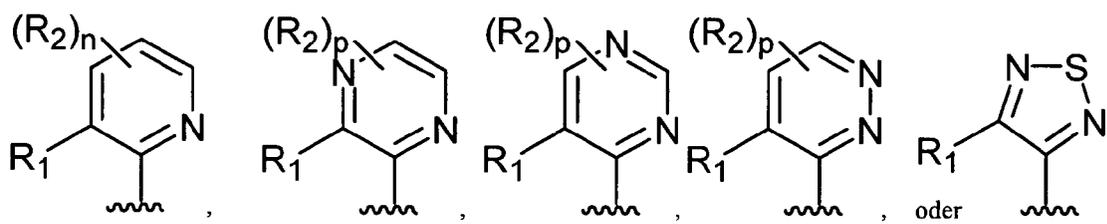
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oder ein pharmazeutisch akzeptables Salz davon, wobei:

Ar₁

25

30

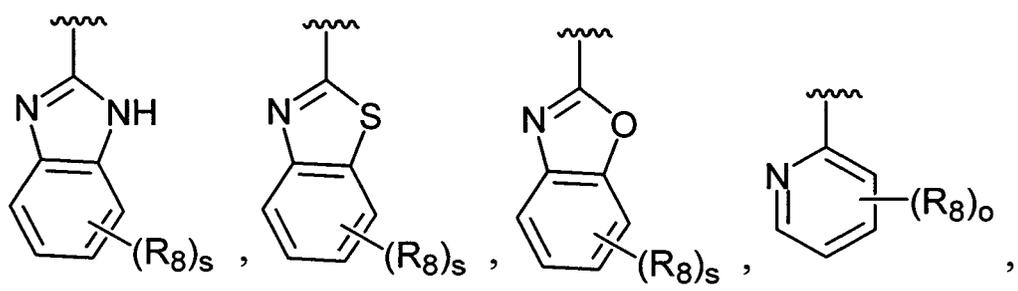


35

ist;
Ar₂

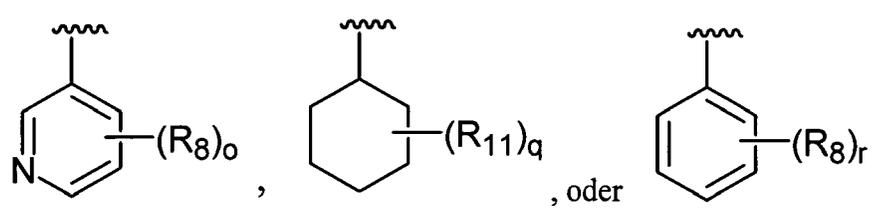
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50

55



ist;

X O oder S ist;

R₁ -Halogen, -CH₃, -C(Halogen)₃, -CH(Halogen)₂, oder -CH₂(Halogen) ist; jedes R₂ unabhängig voneinander:

- 5 (a) -Halogen, -OH, -NH₂, -CN, oder -NO₂ ist;
 (b) -(C₁-C₁₀)Alkyl, -(C₂-C₁₀)Alkenyl, -(C₂-C₁₀)Alkynyl, -(C₃-C₁₀)Cycloalkyl, -(C₈-C₁₄)Bicycloalkyl, -(C₈-C₁₄)Tricycloalkyl, -(C₅-C₁₀)Cycloalkenyl, -(C₈-C₁₄)Bicycloalkenyl, -(C₈-C₁₄)Tricycloalkenyl, -(3- bis 7-gliedriger)Heterozyklus, oder -(7- bis 10-gliedriger)Bicycloheterozyklus ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₅ Gruppen substituiert ist; oder
 10 (c) -Phenyl, -Naphthyl, -(C₁₄)Aryl oder -(5- bis 10-gliedriges)Heteroaryl ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₆ Gruppen substituiert ist;

jedes R₃ unabhängig voneinander:

- 15 (a) -Halogen, -CN, -OH, -NO₂, oder -NH₂ ist;
 (b) -(C₁-C₁₀)Alkyl, -(C₂-C₁₀)Alkenyl, -(C₂-C₁₀)Alkynyl, -(C₃-C₁₀)Cycloalkyl, -(C₈-C₁₄)Bicycloalkyl, -(C₈-C₁₄)Tricycloalkyl, -(C₅-C₁₀)Cycloalkenyl, -(C₈-C₁₄)Bicycloalkenyl, -(C₈-C₁₄)Tricycloalkenyl, -(3- bis 7-gliedriger)Heterozyklus, oder -(7- bis 10-gliedriger)Bicycloheterozyklus ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₅ Gruppen substituiert ist; oder
 20 (c) -Phenyl, -Naphthyl, -(C₁₄)Aryl oder -(5- bis 10-gliedriges)Heteroaryl ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₆ Gruppen substituiert ist;

jedes R₅ unabhängig voneinander -CN, -OH, -(C₁-C₆)Alkyl, -(C₂-C₆)Alkenyl, -Halogen, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, oder -S(O)₂R₇ ist;

- 25 jedes R₆ unabhängig voneinander -(C₁-C₆)Alkyl, -(C₂-C₆)Alkenyl, -(C₂-C₆)Alkynyl, -(C₃-C₈)Cycloalkyl, -(C₅-C₈)Cycloalkenyl, -Phenyl, -(3- bis 5-gliedriger)Heterozyklus, -C(Halogen)₃, -CH(Halogen)₂, -CH₂(Halogen), -CN, -OH, -Halogen, -N₃, -NO₂, N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, oder -S(O)₂R₇ ist;

- 30 jedes R₇ unabhängig voneinander -H, -(C₁-C₆)Alkyl, -(C₂-C₆)Alkenyl, -(C₂-C₆)Alkynyl, -(C₃-C₈)Cycloalkyl, -(C₅-C₈)Cycloalkenyl, -Phenyl, -(3- bis 5-gliedriger)Heterozyklus, -C(Halogen)₃, -CH(Halogen)₂, oder CH₂(Halogen) ist;

- jedes R₈ unabhängig voneinander -(C₁-C₆)Alkyl, -(C₂-C₆)Alkenyl, -(C₂-C₆)Alkynyl, -(C₃-C₈)Cycloalkyl, -(C₅-C₈)Cycloalkenyl, -Phenyl, -C(Halogen)₃, -CH(Halogen)₂, -CH₂(Halogen), -CN, -OH, -Halogen, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, oder -S(O)₂R₇ ist;

- 35 jedes R₁₁ unabhängig voneinander -(C₁-C₆)Alkyl, -(C₂-C₆)Alkenyl, -(C₂-C₆)Alkynyl, -(C₃-C₈)Cycloalkyl, -(C₅-C₈)Cycloalkenyl, -Phenyl, -C(Halogen)₃, -CH(Halogen)₂, -CH₂(Halogen), -CN, -OH, -Halogen, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇, oder -S(O)₂R₇ ist;

jedes Halogen unabhängig voneinander -F, -Cl, -Br, oder -I ist;

m eine ganze Zahl im Bereich von 0 bis 3 ist;

- 40 n eine ganze Zahl im Bereich von 0 bis 3 ist;

o eine ganze Zahl im Bereich von 0 bis 4 ist;

p eine ganze Zahl im Bereich von 0 bis 2 ist;

q eine ganze Zahl im Bereich von 0 bis 6 ist;

r eine ganze Zahl im Bereich von 0 bis 5 ist; und

- 45 s eine ganze Zahl im Bereich von 0 bis 4 ist.

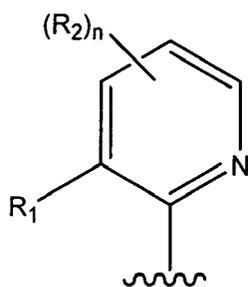
2. Die Verbindung nach Anspruch 1, wobei:

Ar₁

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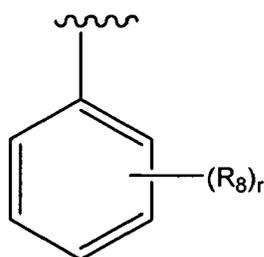


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ist
 Ar_2

15

20



25

ist
 X O ist; und
 R_1 - CH_3 ist.

30

3. Die Verbindung nach Anspruch 2, wobei:

m 0 ist;
 n 0 ist;
 r 1 ist; und
 R_8 -(C_1 - C_6)Alkyl oder - CF_3 ist.

35

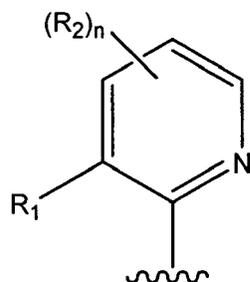
4. Die Verbindung nach Anspruch 3, wobei das -(C_1 - C_6)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar_2 substituiert ist.

40

5. Die Verbindung nach Anspruch 1, wobei:

Ar_1

45



50

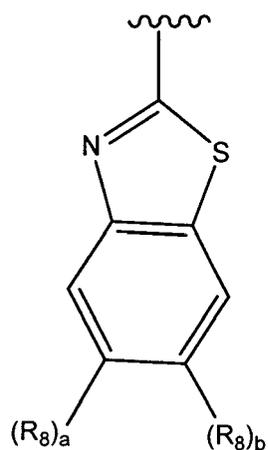
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ist
 Ar_2

5

10

15



20

ist

X O ist;

R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;

m 0 ist;

n 0 ist;

(R₈)_a -H ist; und

25

(R₈)_b -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

6. Die Verbindung nach Anspruch 5, wobei R_1 -CH₃, -CF₃ oder -Cl ist und (R₈)_b -Cl, -F, -CF₃ oder *tert*-Butyl ist.

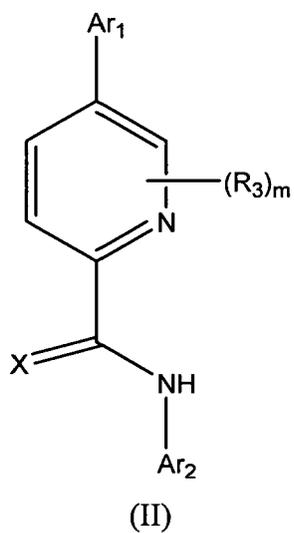
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7. Eine Verbindung der Formel:

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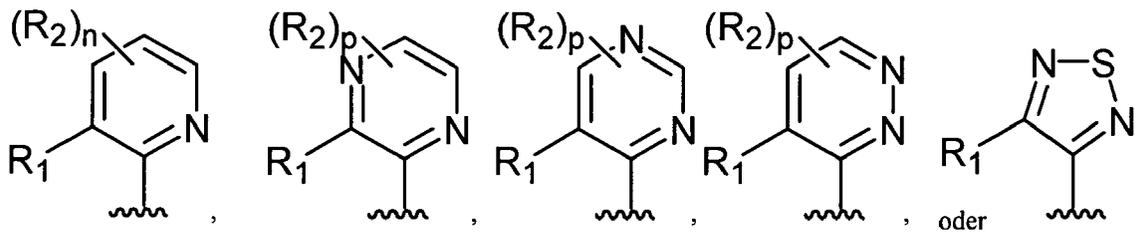
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oder ein pharmazeutisch akzeptables Salz davon, wobei:

Ar₁

55

5

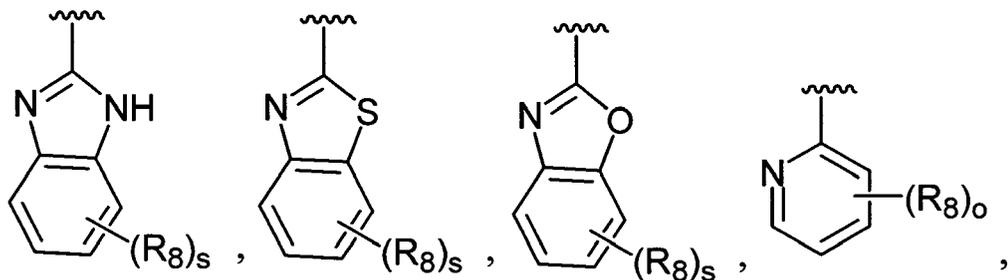


10

ist;
Ar₂

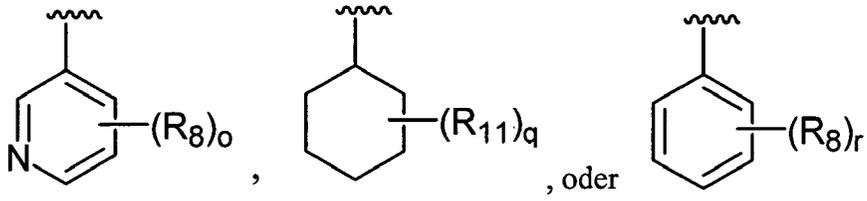
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35

ist;
X O oder S ist;
R₁ -Halogen, -CH₃, -C(Halogen)₃, -CH(Halogen)₂, oder -CH₂(Halogen) ist; jedes R₂ unabhängig voneinander:

40

- (a) -Halogen, -OH, -NH₂, -CN, oder -NO₂ ist;
- (b) -(C₁-C₁₀)Alkyl, -(C₂-C₁₀)Alkenyl, -(C₂-C₁₀)Alkynyl, -(C₃-C₁₀)Cycloalkyl, -(C₈-C₁₄)Bicycloalkyl, -(C₈-C₁₄)Tricycloalkyl, -(C₅-C₁₀)Cycloalkenyl, -(C₈-C₁₄)Bicycloalkenyl, -(C₈-C₁₄)Tricycloalkenyl, -(3- bis 7-gliedriger)Heterozyklus, oder -(7- bis 10-gliedriger)Bicycloheterozyklus ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₅ Gruppen substituiert ist; oder
- (c) -Phenyl, -Naphthyl, -(C₁₄)Aryl oder -(5- bis 10-gliedriges)Heteroaryl ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₆ Gruppen substituiert ist;

45

jedes R₃ unabhängig voneinander:

50

- (a) -Halogen, -CN, -OH, -NO₂, oder -NH₂ ist;
- (b) -(C₁-C₁₀)Alkyl, -(C₂-C₁₀)Alkenyl, -(C₂-C₁₀)Alkynyl, -(C₃-C₁₀)Cycloalkyl, -(C₈-C₁₄)Bicycloalkyl, -(C₈-C₁₄)Tricycloalkyl, -(C₅-C₁₀)Cycloalkenyl, -(C₈-C₁₄)Bicycloalkenyl, -(C₈-C₁₄)Tricycloalkenyl, -(3- bis 7-gliedriger)Heterozyklus, oder -(7- bis 10-gliedriger)Bicycloheterozyklus ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₅ Gruppen substituiert ist; oder
- (c) -Phenyl, -Naphthyl, -(C₁₄)Aryl oder -(5- bis 10-gliedriges)Heteroaryl ist, wobei jedes unsubstituiert oder mit einer oder mehreren R₆ Gruppen substituiert ist;

55

jedes R_5 unabhängig voneinander $-\text{CN}$, $-\text{OH}$, $-(\text{C}_1\text{-C}_6)\text{Alkyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkenyl}$, $-\text{Halogen}$, $-\text{N}_3$, $-\text{NO}_2$, $-\text{N}(\text{R}_7)_2$, $-\text{CH}=\text{NR}_7$, $-\text{NR}_7\text{OH}$, $-\text{OR}_7$, $-\text{COR}_7$, $-\text{C}(\text{O})\text{OR}_7$, $-\text{OC}(\text{O})\text{R}_7$, $-\text{OC}(\text{O})\text{OR}_7$, $-\text{SR}_7$, $-\text{S}(\text{O})\text{R}_7$, oder $-\text{S}(\text{O})_2\text{R}_7$ ist;

jedes R_6 unabhängig voneinander $-(\text{C}_1\text{-C}_6)\text{Alkyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkenyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkynyl}$, $-(\text{C}_3\text{-C}_8)\text{Cycloalkyl}$, $-(\text{C}_5\text{-C}_8)\text{Cycloalkenyl}$, $-\text{Phenyl}$, $-(3\text{- bis } 5\text{-gliedriger})\text{Heterozyklus}$, $-\text{C}(\text{Halogen})_3$, $-\text{CH}(\text{Halogen})_2$, $-\text{CH}_2(\text{Halogen})$, $-\text{CN}$, $-\text{OH}$, $-\text{Halogen}$, $-\text{N}_3$, $-\text{NO}_2$, $\text{N}(\text{R}_7)_2$, $-\text{CH}=\text{NR}_7$, $-\text{NR}_7\text{OH}$, $-\text{OR}_7$, $-\text{COR}_7$, $-\text{C}(\text{O})\text{OR}_7$, $-\text{OC}(\text{O})\text{R}_7$, $-\text{OC}(\text{O})\text{OR}_7$, $-\text{SR}_7$, $-\text{S}(\text{O})\text{R}_7$, oder $-\text{S}(\text{O})_2\text{R}_7$ ist;

jedes R_7 unabhängig voneinander $-\text{H}$, $-(\text{C}_1\text{-C}_6)\text{Alkyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkenyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkynyl}$, $-(\text{C}_3\text{-C}_8)\text{Cycloalkyl}$, $-(\text{C}_5\text{-C}_8)\text{Cycloalkenyl}$, $-\text{Phenyl}$, $-(3\text{- bis } 5\text{-gliedriger})\text{Heterozyklus}$, $-\text{C}(\text{Halogen})_3$, $-\text{CH}(\text{Halogen})_2$, oder $\text{CH}_2(\text{Halogen})$ ist;

jedes R_8 unabhängig voneinander $-(\text{C}_1\text{-C}_6)\text{Alkyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkenyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkynyl}$, $-(\text{C}_3\text{-C}_8)\text{Cycloalkyl}$, $-(\text{C}_5\text{-C}_8)\text{Cycloalkenyl}$, $-\text{Phenyl}$, $-\text{C}(\text{Halogen})_3$, $-\text{CH}(\text{Halogen})_2$, $-\text{CH}_2(\text{Halogen})$, $-\text{CN}$, $-\text{OH}$, $-\text{Halogen}$, $-\text{N}_3$, $-\text{NO}_2$, $-\text{N}(\text{R}_7)_2$, $-\text{CH}=\text{NR}_7$, $-\text{NR}_7\text{OH}$, $-\text{OR}_7$, $-\text{COR}_7$, $-\text{C}(\text{O})\text{OR}_7$, $-\text{OC}(\text{O})\text{R}_7$, $-\text{OC}(\text{O})\text{OR}_7$, $-\text{SR}_7$, $-\text{S}(\text{O})\text{R}_7$, oder $-\text{S}(\text{O})_2\text{R}_7$ ist;

jedes R_{11} unabhängig voneinander $-(\text{C}_1\text{-C}_6)\text{Alkyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkenyl}$, $-(\text{C}_2\text{-C}_6)\text{Alkynyl}$, $-(\text{C}_3\text{-C}_8)\text{Cycloalkyl}$, $-(\text{C}_5\text{-C}_8)\text{Cycloalkenyl}$, $-\text{Phenyl}$, $-\text{C}(\text{Halogen})_3$, $-\text{CH}(\text{Halogen})_2$, $-\text{CH}_2(\text{Halogen})$, $-\text{CN}$, $-\text{OH}$, $-\text{Halogen}$, $-\text{N}_3$, $-\text{NO}_2$, $-\text{N}(\text{R}_7)_2$, $-\text{CH}=\text{NR}_7$, $-\text{NR}_7\text{OH}$, $-\text{OR}_7$, $-\text{COR}_7$, $-\text{C}(\text{O})\text{OR}_7$, $-\text{OC}(\text{O})\text{R}_7$, $-\text{OC}(\text{O})\text{OR}_7$, $-\text{SR}_7$, $-\text{S}(\text{O})\text{R}_7$, oder $-\text{S}(\text{O})_2\text{R}_7$ ist;

jedes Halogen unabhängig voneinander $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, oder $-\text{I}$ ist;

m eine ganze Zahl im Bereich von 0 bis 3 ist;

n eine ganze Zahl im Bereich von 0 bis 3 ist;

o eine ganze Zahl im Bereich von 0 bis 4 ist;

p eine ganze Zahl im Bereich von 0 bis 2 ist;

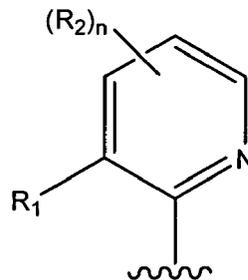
q eine ganze Zahl im Bereich von 0 bis 6 ist;

r eine ganze Zahl im Bereich von 0 bis 5 ist; und

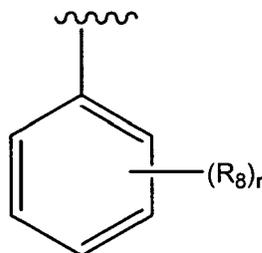
s eine ganze Zahl im Bereich von 0 bis 4 ist.

8. Die Verbindung nach Anspruch 7, wobei:

Ar_1



ist Ar_2



ist X O ist; und $\text{R}_1 -\text{CH}_3$ ist.

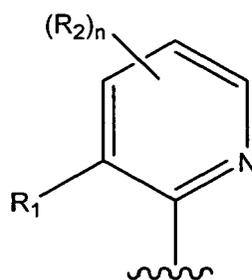
9. Die Verbindung nach Anspruch 8, wobei:

m 0 ist;
 n 0 ist;
 r 1 ist; und
 R_8 -(C₁-C₆)Alkyl oder -CF₃ ist.

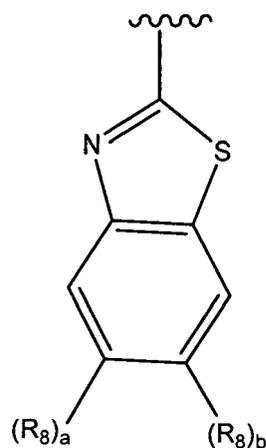
10. Die Verbindung nach Anspruch 9, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

11. Die Verbindung nach Anspruch 7, wobei:

Ar₁



ist
 Ar₂



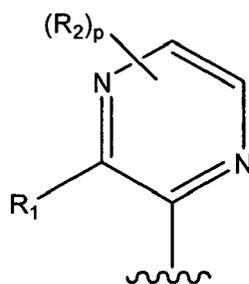
ist
 X O ist;
 R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 n 0 ist;
 $(R_8)_a$ -H ist; und
 $(R_8)_b$ -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

12. Die Verbindung nach Anspruch 11, wobei R_1 -CH₃, -CF₃ oder -Cl ist und $(R_8)_b$ -Cl, -F, -CF₃ oder *tert*-Butyl ist.

13. Die Verbindung nach Anspruch 1, wobei:

Ar₁

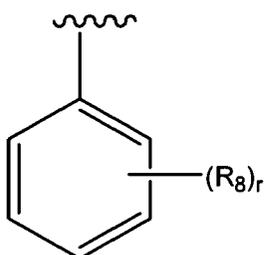
5



10

ist
 Ar_2

15



20

25

ist
 X O ist; und
 R_1 - CH_3 ist.

30

14. Die Verbindung nach Anspruch 13, wobei:

m 0 ist;
 p 0 ist;
 r 1 ist; und
 R_8 -(C_1 - C_6)Alkyl oder - CF_3 ist.

35

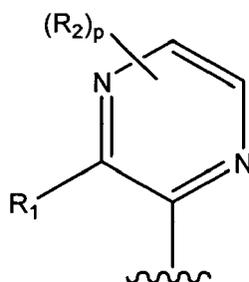
15. Die Verbindung nach Anspruch 14, wobei das -(C_1 - C_6)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar_2 substituiert ist.

40

16. Die Verbindung nach Anspruch 1, wobei:

Ar_1

45



50

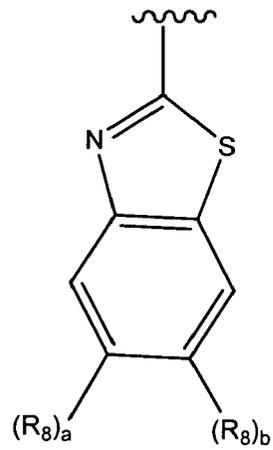
55

ist
 Ar_2

5

10

15



20

ist

X O ist;

R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;

m 0 ist;

p 0 ist;

25

(R₈)_a -H ist; und

(R₈)_b -H, -CH₃, -CF₃, -OCH₂CH₃, tert-Butyl, -Cl, -Br, -I, oder -F ist.

17. Die Verbindung nach Anspruch 16, wobei R_1 -CH₃, -CF₃ oder -Cl ist und (R₈)_b -Cl, -F, -CF₃ oder *tert*-Butyl ist.

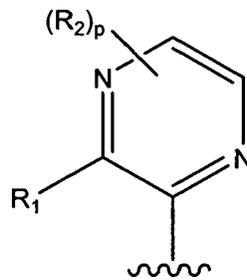
30

18. Die Verbindung nach Anspruch 7, wobei:

Ar₁

35

40



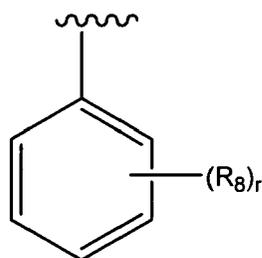
45

ist

Ar₂

50

55



ist
 X O ist; und
 R₁ -CH₃ ist.

5 **19.** Die Verbindung nach Anspruch 18, wobei:

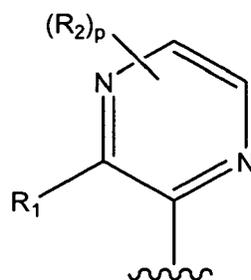
m 0 ist;
 p 0 ist;
 r 1 ist; und
 10 R₈ -(C₁-C₆)Alkyl oder -CF₃ ist.

20. Die Verbindung nach Anspruch 19, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

15 **21.** Die Verbindung nach Anspruch 7, wobei:

Ar₁

20

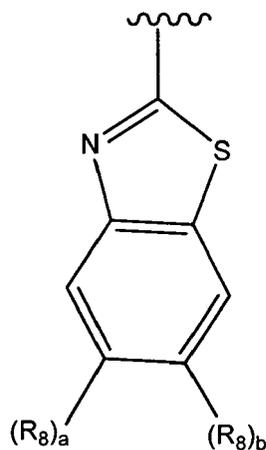


25

30

ist
 Ar₂

35



40

45

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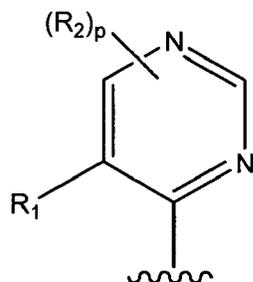
ist
 X O ist;
 R₁ -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 p 0 ist;
 55 (R₈)_a -H ist; und
 (R₈)_b -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

22. Die Verbindung nach Anspruch 21, wobei R_1 -CH₃, -CF₃ oder -Cl ist und $(R_8)_b$ -Cl, -F, -CF₃ oder *tert*-Butyl ist.

23. Die Verbindung nach Anspruch 1, wobei:

5 Ar₁

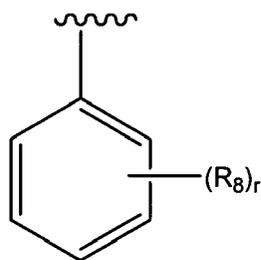
10



15

20 ist
Ar₂

25



30

35 ist
X O ist; und
 R_1 -CH₃ ist.

24. Die Verbindung nach Anspruch 23, wobei:

40 m 0 ist;
p 0 ist;
r 1 ist; und
 R_8 -(C₁-C₆)Alkyl oder -CF₃ ist.

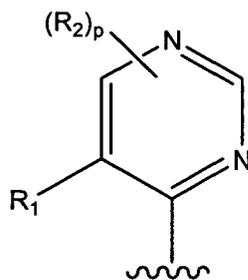
45 25. Die Verbindung nach Anspruch 24, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

26. Die Verbindung nach Anspruch 1, wobei:

50 Ar₁

55

5

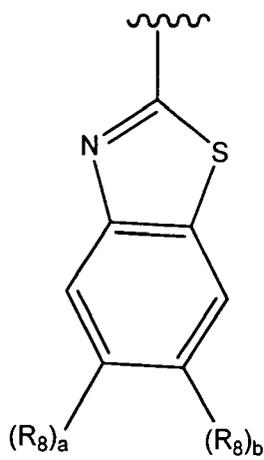


10

ist
 Ar_2

15

20



25

30

ist
 X O ist;
 R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 p 0 ist;
 $(R_8)_a$ -H ist; und
 $(R_8)_b$ -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

35

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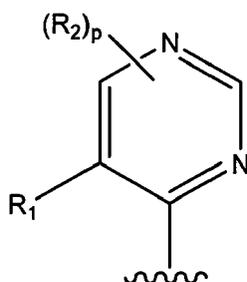
27. Die Verbindung nach Anspruch 26, wobei R_1 -CH₃, -CF₃ oder -Cl ist und $(R_8)_b$ -Cl, -F, -CF₃ oder *tert*-Butyl ist.

28. Die Verbindung nach Anspruch 7, wobei:

45

Ar_1

50



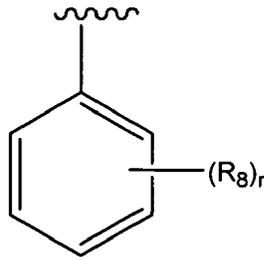
55

ist

Ar₂

5

10



15

ist
X O ist; und
R₁ -CH₃ ist.

29. Die Verbindung nach Anspruch 28, wobei:

20

m 0 ist;
p 0 ist;
r 1 ist; und
R₈ -(C₁-C₆)Alkyl oder -CF₃ ist.

25

30. Die Verbindung nach Anspruch 29, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

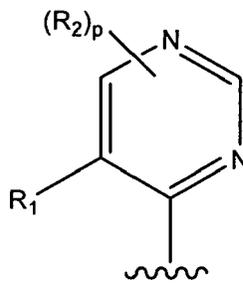
31. Die Verbindung nach Anspruch 7, wobei:

30

Ar₁

35

40



45

ist
Ar₂

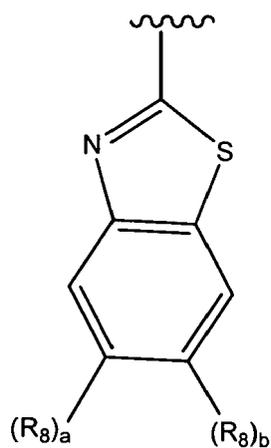
50

55

5

10

15



20

25

ist
 X O ist;
 R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 p 0 ist;
 $(R_8)_a$ -H ist; und
 $(R_8)_b$ -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

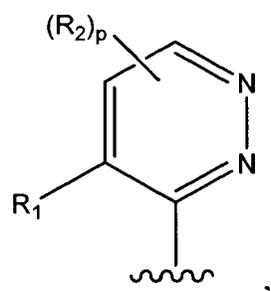
32. Die Verbindung nach Anspruch 31, wobei R_1 -CH₃, -CF₃ oder -Cl ist und $(R_8)_b$ -Cl, -F, -CF₃ oder *tert*-Butyl ist.

30

Ar₁

35

40

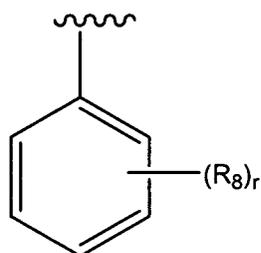


45

ist
 Ar₂

50

55



ist
 X O ist; und
 R₁ -CH₃ ist.

5 34. Die Verbindung nach Anspruch 33, wobei:

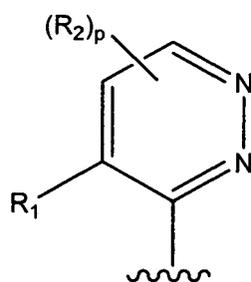
m 0 ist;
 p 0 ist;
 r 1 ist; und
 10 R₈ -(C₁-C₆)Alkyl oder -CF₃ ist.

35. Die Verbindung nach Anspruch 34, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

15 36. Die Verbindung nach Anspruch 1, wobei:

Ar₁

20

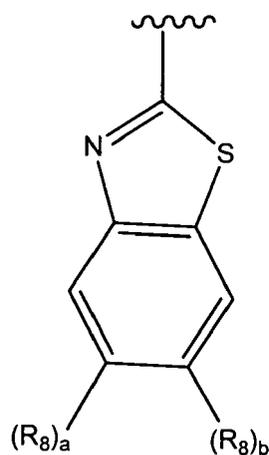


25

30

ist
 Ar₂

35



40

45

50

ist
 X O ist;
 R₁ -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 p 0 ist;
 55 (R₈)_a -H ist; und
 (R₈)_b -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

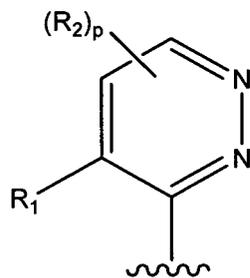
37. Die Verbindung nach Anspruch 36, wobei R₁ -CH₃, -CF₃ oder -Cl ist und (R₈)_b -Cl, -F, -CF₃ oder *tert*-Butyl ist.

38. Die Verbindung nach Anspruch 7, wobei:

Ar₁

5

10

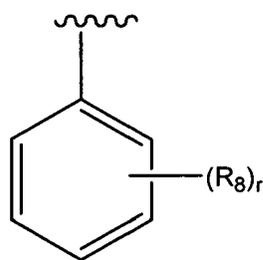


15

ist
Ar₂

20

25



30

ist
X O ist; und
R₁ -CH₃ ist.

35 39. Die Verbindung nach Anspruch 38, wobei:

m 0 ist;
p 0 ist;
r 1 ist; und
R₈ -(C₁-C₆)Alkyl oder -CF₃ ist.

40

40. Die Verbindung nach Anspruch 39, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

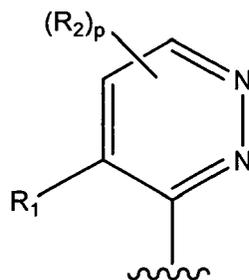
45 41. Die Verbindung nach Anspruch 7, wobei:

Ar₁

50

55

5

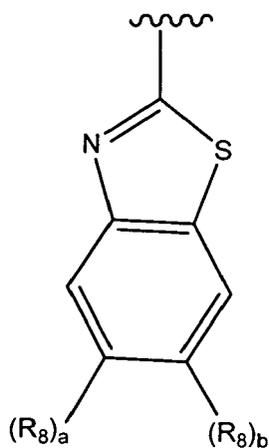


10

ist
 Ar_2

15

20



25

30

ist
 X O ist;
 R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 p 0 ist;
 $(R_8)_a$ -H ist; und
 $(R_8)_b$ -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

35

40

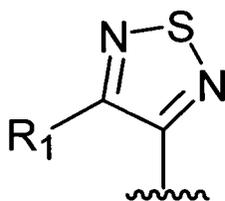
42. Die Verbindung nach Anspruch 41, wobei R_1 -CH₃, -CF₃ oder -Cl ist und $(R_8)_b$ -Cl, -F, -CF₃ oder *tert*-Butyl ist.

43. Die Verbindung nach Anspruch 1, wobei:

45

Ar_1

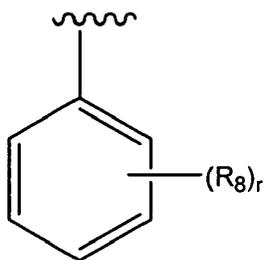
50



55

ist
 Ar_2

5



10

ist
 $X = O$ ist; und
 $R_1 = -CH_3$ ist.

15

44. Die Verbindung nach Anspruch 43, wobei:

$m = 0$ ist;
 $r = 1$ ist; und
 $R_8 = (C_1-C_6)$ Alkyl oder $-CF_3$ ist.

20

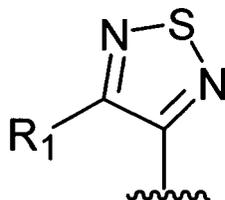
45. Die Verbindung nach Anspruch 44, wobei das (C_1-C_6) Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar_2 substituiert ist.

25

46. Die Verbindung nach Anspruch 1, wobei:

Ar_1

30

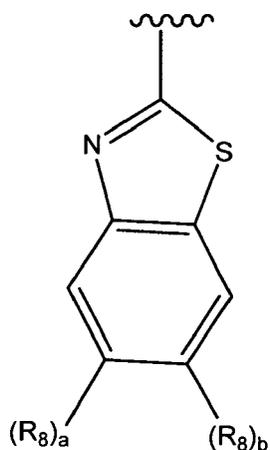


35

ist
 Ar_2

40

45



50

55

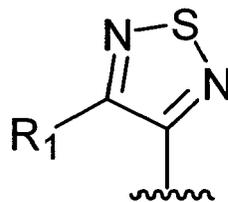
ist

X O ist;
 R_1 -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
 m 0 ist;
 (R₈)_a -H ist; und
 (R₈)_b -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

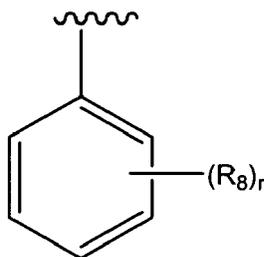
47. Die Verbindung nach Anspruch 46, wobei R_1 -CH₃, -CF₃ oder -Cl ist und (R₈)_b -Cl, -F, -CF₃ oder *tert*-Butyl ist.

48. Die Verbindung nach Anspruch 7, wobei:

Ar₁



ist
 Ar₂



ist
 X O ist; und
 R_1 -CH₃ ist.

49. Die Verbindung nach Anspruch 48, wobei:

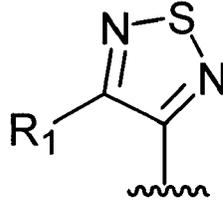
m 0 ist;
 r 1 ist; und
 R_8 -(C₁-C₆)Alkyl oder -CF₃ ist.

50. Die Verbindung nach Anspruch 49, wobei das -(C₁-C₆)Alkyl eine *tert*-Butyl Gruppe ist, wobei die *tert*-Butyl Gruppe bevorzugt an der *para*-Position von Ar₂ substituiert ist.

51. Die Verbindung nach Anspruch 7, wobei:

Ar₁

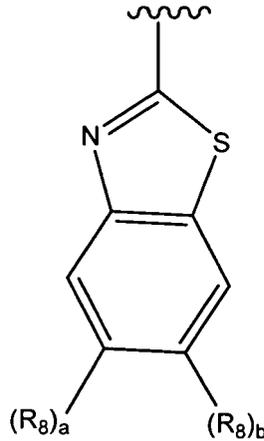
5



10

ist
Ar₂

15



20

25

30

ist
X O ist;
R₁ -CH₃, -CF₃, -Cl, -Br, -I, oder -F ist;
m 0 ist;

35

(R₈)_a -H ist; und
(R₈)_b -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-Butyl, -Cl, -Br, -I, oder -F ist.

52. Die Verbindung nach Anspruch 51, wobei R₁ -CH₃, -CF₃ oder -Cl ist und (R₈)_b -Cl, -F, -CF₃ oder *tert*-Butyl ist.

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53. Eine Zusammensetzung umfassend die Verbindung nach Anspruch 1 oder Anspruch 7 oder ein pharmazeutisch akzeptables Salz davon und einen pharmazeutisch akzeptablen Träger oder Hilfsstoff.

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54. Verwendung einer wirksamen Menge einer Verbindung nach Anspruch 1 oder Anspruch 7 oder eines pharmazeutisch akzeptablen Salzes davon zur Herstellung eines Medikaments zur Behandlung von Schmerz, Harninkontinenz, eines Geschwürs, Reizdarmsyndrom oder chronisch entzündlicher Darmerkrankung in einem Tier.

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55. Verwendung einer Verbindung nach Anspruch 1 oder Anspruch 7 oder eines pharmazeutisch akzeptablen Salzes davon zur Herstellung eines Medikaments zur Inhibierung der VR1 Funktion in einer Zelle.

56. Eine Methode zur Inhibierung der VR1 Funktion in einer Zelle umfassend das Kontaktieren einer Zelle, welche fähig ist VR1 zu exprimieren, mit einer wirksamen Menge der Verbindung nach Anspruch 1 oder Anspruch 7 oder eines pharmazeutisch akzeptablen Salzes davon, wobei die Zelle sich nicht in direktem Kontakt mit dem menschlichen oder tierischen Körper befindet.

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57. Ein Kit umfassend einen Behälter enthaltend eine wirksame Menge einer Verbindung nach Anspruch 1 oder Anspruch 7 oder eines pharmazeutisch akzeptablen Salzes davon.

58. Eine Methode zur Herstellung einer Verbindung, umfassend den Schritt des Beimischens einer Verbindung nach Anspruch 1 oder Anspruch 7 oder eines pharmazeutisch akzeptablen Salzes davon und eines pharmazeutisch

akzeptablen Trägers oder Hilfsstoffes.

Revendications

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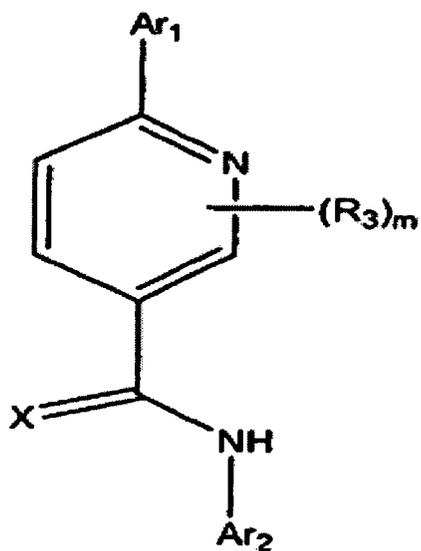
1. Composé de formule :

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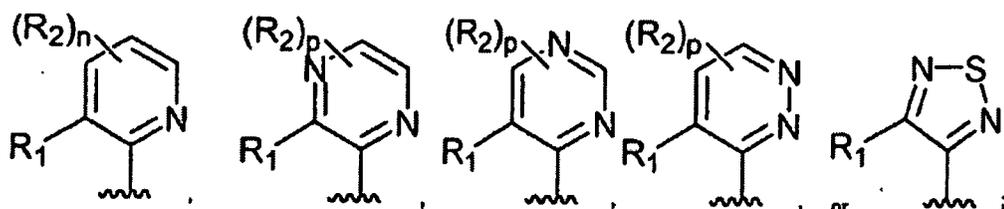
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ou un sel pharmaceutiquement acceptable de celui-ci, dans lequel :

Ar₁ représente

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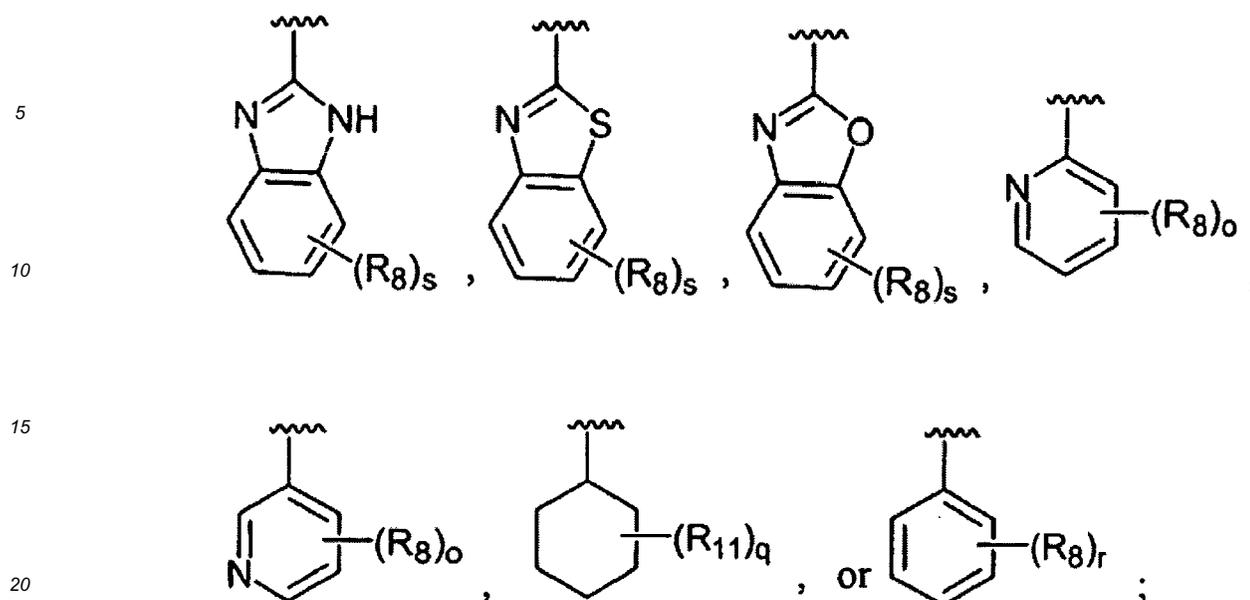


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Ar₂ représente

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X représente O ou S ;

R₁ représente un groupe -halo, -CH₃, -C(halo)₃, -CH(halo)₂ ou -CH₂(halo);

chaque R₂ représente indépendamment :

(a) un groupe -halo, -OH, -NH₂, -CN ou -NO₂ ;

(b) un groupe -alkyle (C₁-C₁₀), -alkényle (C₂-C₁₀), -alkynyle (C₂-C₁₀), -cycloalkyle (C₃-C₁₀), -bicycloalkyle (C₈-C₁₄), -tricycloalkyle (C₈-C₁₄), -cycloalkényle (C₅-C₁₀), -bicycloalkényle (C₈-C₁₄), -tricycloalkényle (C₈-C₁₄), -hétérocycle de 3 à 7 membres ou -bicyclohétérocycle de 7 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₅ ; ou

(c) un groupe -phényle, -naphthyle, -aryle (C₁₄) ou -hétéroaryle de 5 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₆ ;

chaque R₃ représente indépendamment :

(a) un groupe -halo, -CN, -OH, -NO₂ ou -NH₂ ;

(b) un groupe -alkyle (C₁-C₁₀), -alkényle (C₂-C₁₀), -alkynyle (C₂-C₁₀), -cycloalkyle (C₃-C₁₀), -bicycloalkyle (C₈-C₁₄), -tricycloalkyle (C₈-C₁₄), -cycloalkényle (C₅-C₁₀), -bicycloalkényle (C₈-C₁₄), -tricycloalkényle (C₈-C₁₄), -hétérocycle de 3 à 7 membres ou -bicyclohétérocycle de 7 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₅ ; ou

(c) un groupe -phényle, -naphthyle, -aryle (C₁₄) ou -hétéroaryle de 5 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₆ ;

chaque R₅ représente indépendamment un groupe -CN, -OH, -alkyle (C₁-C₆), -alkényle (C₂-C₆), -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O)₂R₇ ;

chaque R₆ représente indépendamment un groupe -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -hétérocycle de 3 à 5 membres, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O)₂R₇ ;

chaque R₇ représente indépendamment un groupe -H, -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -hétérocycle de 3 à 5 membres, -C(halo)₃, -CH(halo)₂ ou -CH₂(halo) ;

chaque R₈ représente indépendamment un groupe -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O)₂R₇ ;

chaque R_{11} représente indépendamment un groupe -alkyle (C_1-C_6), -alkényle (C_2-C_6), -alkynyle (C_2-C_6), -cycloalkyle (C_3-C_8), -cycloalkényle (C_5-C_8), -phényle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O)₂R₇ ;

chaque halo représente indépendamment -F, -Cl, -Br ou -I ;

m est un entier de 0 à 3 ;

n est un entier de 0 à 3 ;

o est un entier de 0 à 4 ;

p est un entier de 0 à 2 ;

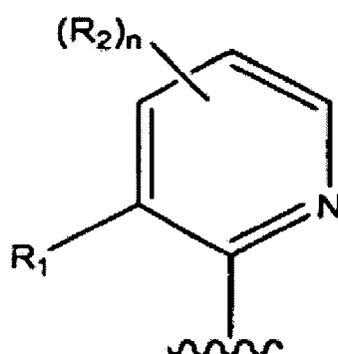
q est un entier de 0 à 6 ;

r est un entier de 0 à 5 ; et

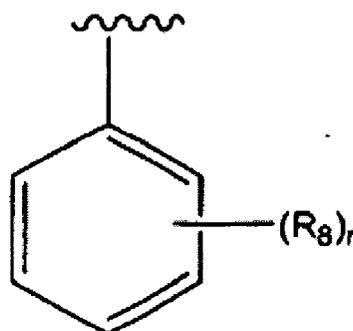
s est un entier de 0 à 4.

2. Composé de la revendication 1, dans lequel :

Ar₁ représente



Ar₂ représente



X représente O ; et

R₁ représente -CH₃.

3. Composé de la revendication 2, dans lequel :

m est égal à 0 ;

n est égal à 0 ;

r est égal à 1 ; et

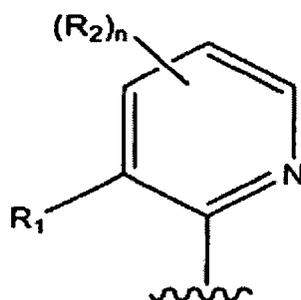
R₈ représente un groupe -alkyle (C_1-C_6) ou -CF₃.

4. Composé de la revendication 3, dans lequel le groupe -alkyle (C_1-C_6) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position *para* de Ar₂.

5. Composé de la revendication 1, dans lequel :

Ar₁ représente

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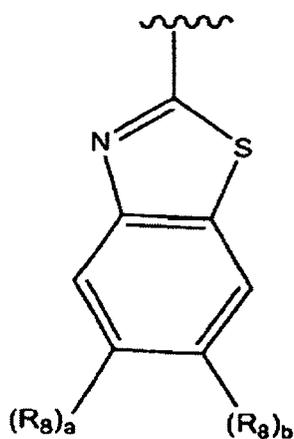


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Ar₂ représente

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X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I ou -F ;

m est égal à 0 ;

n est égal à 0 ;

(R₈)_a représente -H ; et

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(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

6. Composé de la revendication 5, dans lequel R₁ représente -CH₃, -CF₃ ou -Cl et (R₈)_b représente -Cl, -F, -CH₃ ou *tert*-butyle.

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7. Composé de formule :

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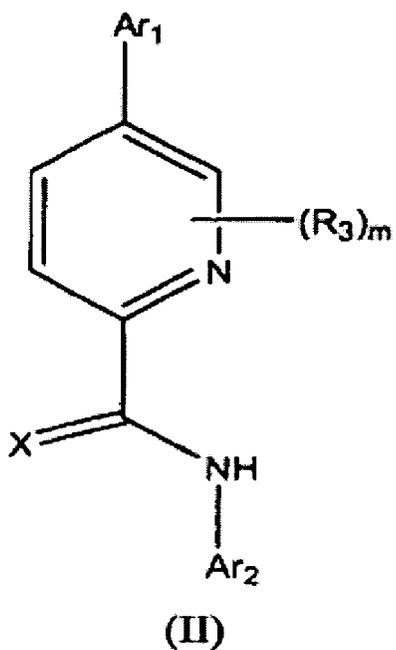
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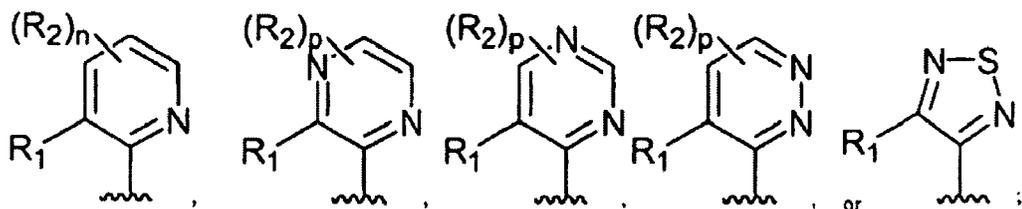
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ou un sel pharmaceutiquement acceptable de celui-ci, dans lequel :

Ar₁ représente

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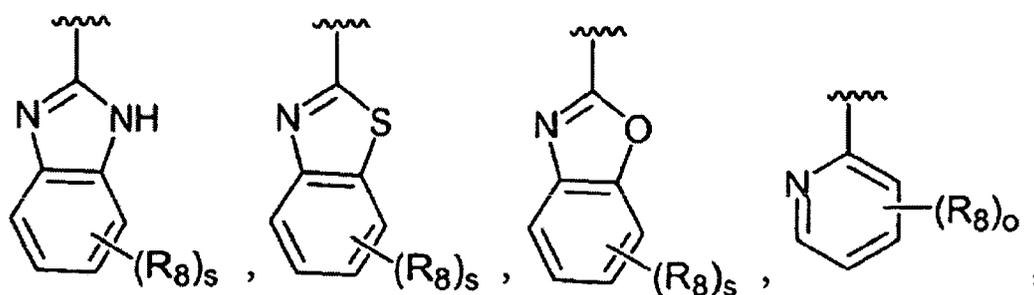


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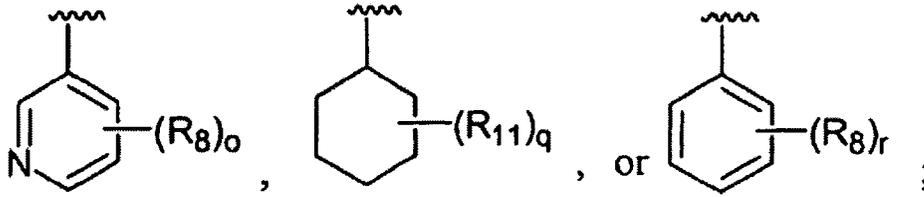
Ar₂ représente

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10 X représente O ou S ;

R₁ représente un groupe -halo, -CH₃, -C(halo)₃, -CH(halo)₂ ou -CH₂(halo) ;
chaque R₂ représente indépendamment :

15 (a) un groupe -halo, -OH, -NH₂, -CN ou -NO₂ ;

(b) un groupe -alkyle (C₁-C₁₀), -alkényle (C₂-C₁₀), -alkynyle (C₂-C₁₀), -cycloalkyle (C₃-C₁₀), -bicycloalkyle (C₈-C₁₄), -tricycloalkyle (C₈-C₁₄), -cycloalkényle (C₅-C₁₀), -bicycloalkényle (C₈-C₁₄), -tricycloalkényle (C₈-C₁₄), -hétérocycle de 3 à 7 membres ou -bicyclohétérocycle de 7 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₅ ; ou

20 (c) un groupe -phényle, -naphthyle, -aryle (C₁₄) ou -hétéroaryle de 5 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₆ ;

chaque R₃ représente indépendamment :

25 (a) un groupe -halo, -CN, -OH, -NO₂ ou -NH₂ ;

(b) un groupe -alkyle (C₁-C₁₀), -alkényle (C₂-C₁₀), -alkynyle (C₂-C₁₀), -cycloalkyle (C₃-C₁₀), -bicycloalkyle (C₈-C₁₄), -tricycloalkyle (C₈-C₁₄), -cycloalkényle (C₅-C₁₀), -bicycloalkényle (C₈-C₁₄), -tricycloalkényle (C₈-C₁₄), -hétérocycle de 3 à 7 membres ou -bicyclohétérocycle de 7 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₅ ; ou

30 (c) un groupe -phényle, -naphthyle, -aryle (C₁₄) ou -hétéroaryle de 5 à 10 membres, chacun d'eux étant non substitué ou substitué avec un ou plusieurs groupes R₆ ;

chaque R₅ représente indépendamment un groupe -CN, -OH, -alkyle (C₁-C₆), -alkényle (C₂-C₆), -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O₂)R₇ ;

35 chaque R₆ représente indépendamment un groupe -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -hétérocycle de 3 à 5 membres, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O₂)R₇ ;

40 chaque R₇ représente indépendamment un groupe -H, -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -hétérocycle de 3 à 5 membres, -C(halo)₃, -CH(halo)₂ ou -CH₂(halo) ;

45 chaque R₈ représente indépendamment un groupe -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O₂)R₇ ;

chaque R₁₁ représente indépendamment un groupe -alkyle (C₁-C₆), -alkényle (C₂-C₆), -alkynyle (C₂-C₆), -cycloalkyle (C₃-C₈), -cycloalkényle (C₅-C₈), -phényle, -C(halo)₃, -CH(halo)₂, -CH₂(halo), -CN, -OH, -halo, -N₃, -NO₂, -N(R₇)₂, -CH=NR₇, -NR₇OH, -OR₇, -COR₇, -C(O)OR₇, -OC(O)R₇, -OC(O)OR₇, -SR₇, -S(O)R₇ ou -S(O₂)R₇ ;

50 chaque halo représente indépendamment -F, -Cl, -Br ou -I ;

m est un entier de 0 à 3 ;

n est un entier de 0 à 3 ;

o est un entier de 0 à 4 ;

p est un entier de 0 à 2 ;

55 q est un entier de 0 à 6 ;

r est un entier de 0 à 5 ; et

s est un entier de 0 à 4.

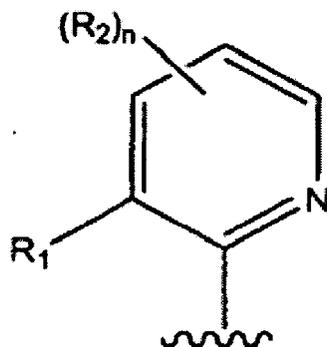
8. Composé de la revendication 7, dans lequel :

Ar₁ représente

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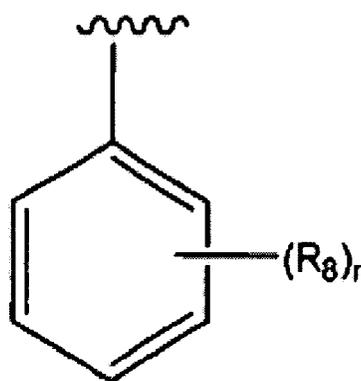


Ar₂ représente

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X représente O ; et
R₁ représente -CH₃.

9. Composé de la revendication 8, dans lequel :

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m est égal à 0 ;
n est égal à 0 ;
r est égal à 1 ; et
R₈ représente un groupe -alkyle (C₁-C₆) ou -CF₃.

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10. Composé de la revendication 9, dans lequel le groupe -alkyle (C₁-C₆) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position *para* de Ar₂.

11. Composé de la revendication 7 dans lequel :

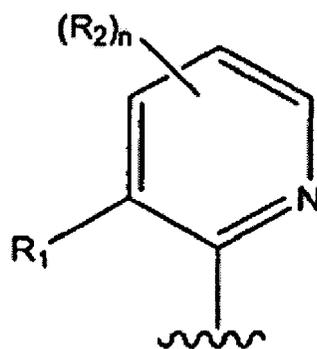
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Ar₁ représente

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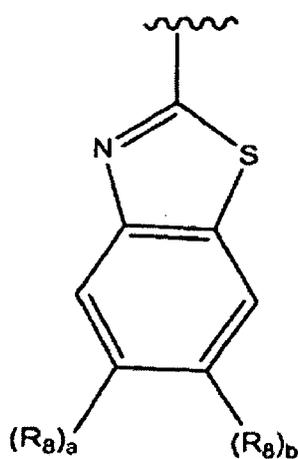
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Ar₂ représente

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X représente O ;

R₁ représente un groupe -CH₃, -CF₃, -Cl, -Br, -I ou -F ;

m est égal à 0 ;

n est égal 0 ;

(R₈)_a représente -H ; et

(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

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12. Composé de la revendication 11, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

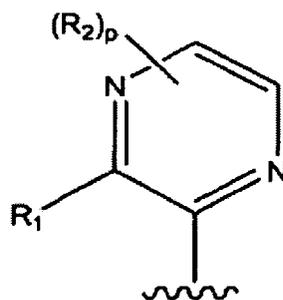
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13. Composé de la revendication 1, dans lequel :

Ar₁ représente

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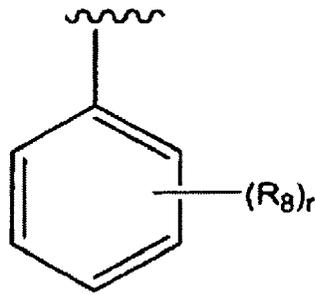
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Ar₂ représente

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X représente O ; et
R₁ représente -CH₃.

14. Composé de la revendication 13, dans lequel :

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m est égal à 0 ;
p est égal à 0 ;
r est égal à 1 ; et
R₈ représente un groupe -alkyle (C₁-C₆) ou -CF₃.

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15. Composé de la revendication 14, dans lequel le groupe -alkyle (C₁-C₆) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position *para* de Ar₂.

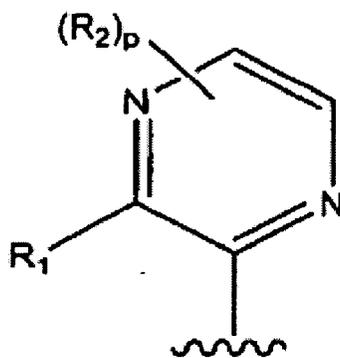
16. Composé de la revendication 1, dans lequel :

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Ar₁ représente

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Ar₂ représente

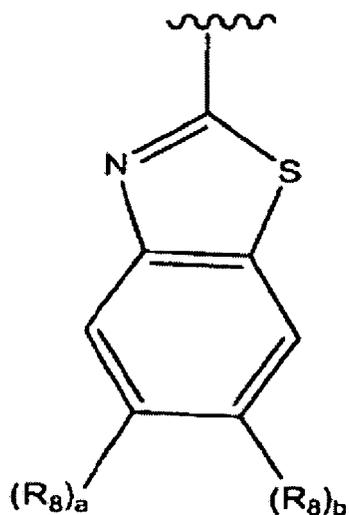
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X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;

m est égal à 0 ;

p est égal à 0 ;

(R₈)_a représente -H ; et

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(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

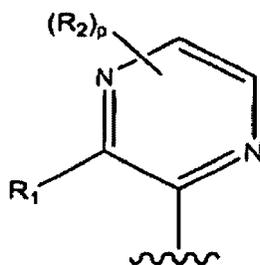
17. Composé de la revendication 16, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

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18. Composé de la revendication 7, dans lequel :

Ar₁ représente

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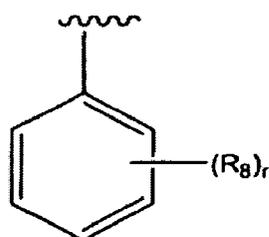


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Ar₂ représente

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X représente O ; et

R₁ représente un groupe -CH₃.

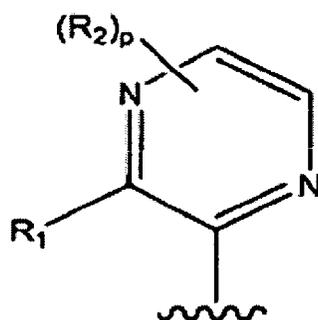
19. Composé de la revendication 18, dans lequel :

m est égal à 0 ;
 p est égal à 0 ;
 r est égal à 1 ; et
 R_8 représente un groupe -alkyle (C_1-C_6) ou $-CF_3$.

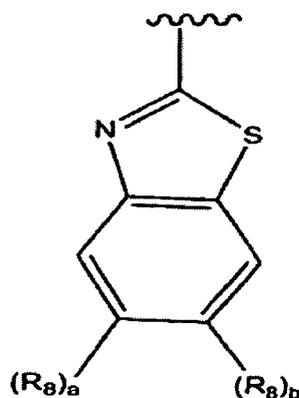
20. Composé de la revendication 19, dans lequel le groupe -alkyle (C_1-C_6) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position para de Ar_2 .

21. Composé de la revendication 7, dans lequel :

Ar_1 représente



Ar_2 représente



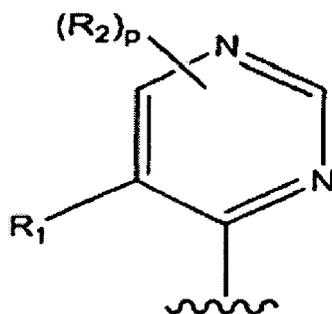
X représente O ;
 R_1 représente $-CH_3$, $-CF_3$, $-Cl$, $-Br$, $-I$, ou $-F$;
 m est égal à 0 ;
 p est égal à 0 ;
 $(R_8)_a$ représente $-H$; et
 $(R_8)_b$ représente $-H$, $-CH_3$, $-CF_3$, $-OCH_2CH_3$, *tert*-butyle, $-Cl$, $-Br$, $-I$ ou $-F$.

22. Composé de la revendication 21, dans lequel R_1 représente un groupe $-CH_3$, $-CF_3$ ou $-Cl$, et $(R_8)_b$ représente un groupe $-Cl$, $-F$, $-CF_3$ ou *tert*-butyle.

23. Composé de la revendication 1, dans lequel :

Ar_1 représente

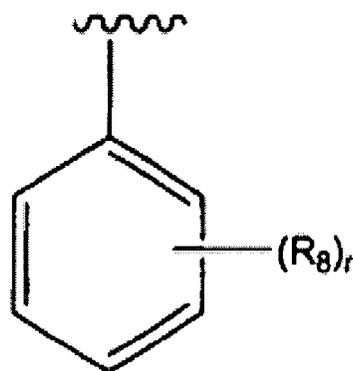
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Ar₂ représente

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X représente O ; et
 R_1 représente $-CH_3$.

24. Composé de la revendication 23, dans lequel :

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m est égal à 0 ;
 p est égal à 0 ;
 r est égal à 1 ; et
 R_8 représente un groupe -alkyle (C_1-C_6) ou $-CF_3$.

40

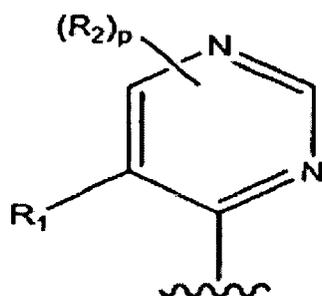
25. Composé de la revendication 24, dans lequel le groupe -alkyle (C_1-C_6) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position para de Ar₂.

26. Composé de la revendication 1, dans lequel :

45

Ar₁ représente

50



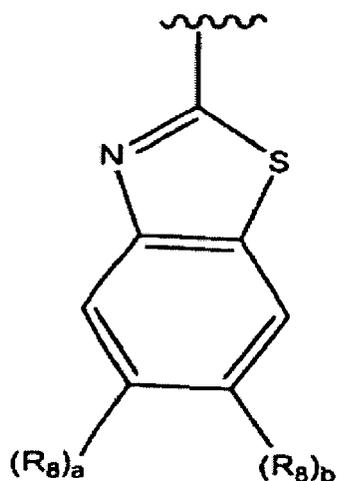
55

Ar₂ représente

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20

X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;

m est égal à 0 ;

p est égal à 0 ;

25

(R₈)_a représente -H ; et(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

27. Composé de la revendication 26, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

30

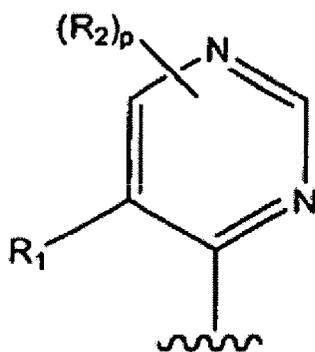
28. Composé de la revendication 7, dans lequel :

Ar₁ représente

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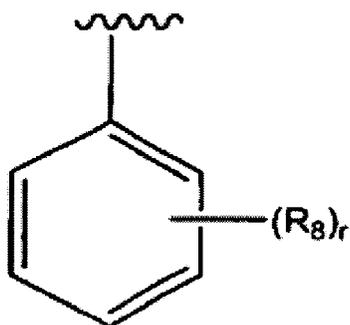
50

Ar₂ représente

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15

X représente O ; et
 R_1 représente $-CH_3$.

29. Composé de la revendication 28, dans lequel :

20

m est égal à 0 ;
 p est égal à 0 ;
 r est égal à 1 ; et
 R_8 représente un groupe -alkyle (C_1-C_6) ou $-CF_3$.

25

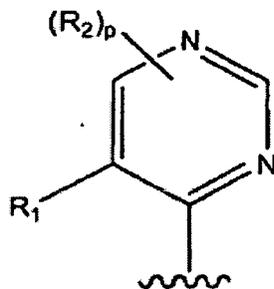
30. Composé de la revendication 29, dans lequel le groupe -alkyle (C_1-C_6) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position para de Ar_2 .

31. Composé de la revendication 7, dans lequel :

30

Ar_1 représente

35



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Ar_2 représente

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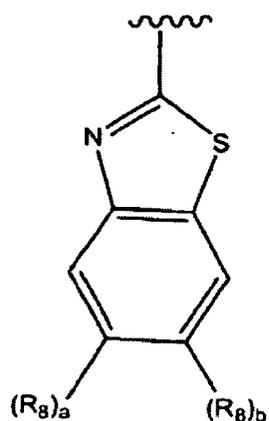
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20

X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;

m est égal à 0 ;

p est égal à 0 ;

(R₈)_a représente -H ; et

(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

25

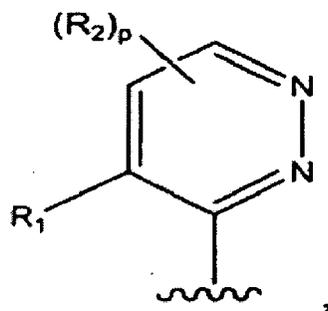
32. Composé de la revendication 31, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

30

Ar₁ représente

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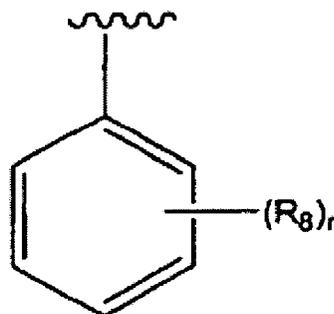


45

Ar₂ représente

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55



X représente O ; et

R₁ représente -CH₃.

34. Composé de la revendication 33, dans lequel :

m est égal à 0 ;

p est égal à 0 ;

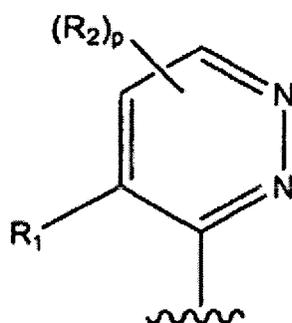
r est égal à 1 ; et

R₈ représente un groupe -alkyle (C₁-C₆) ou -CF₃.

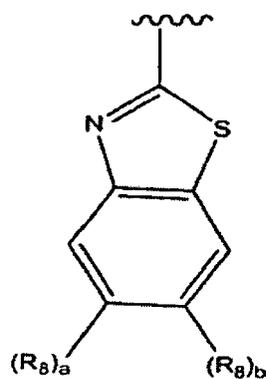
35. Composé de la revendication 34, dans lequel le groupe -alkyle (C₁-C₆) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position para de Ar₂.

36. Composé de la revendication 1, dans lequel :

Ar₁ représente



Ar₂ représente



X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;

m est égal à 0 ;

p est égal à 0 ;

(R₈)_a représente -H ; et

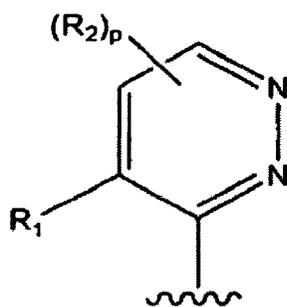
(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

37. Composé de la revendication 36, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

38. Composé de la revendication 7, dans lequel :

Ar₁ représente

5

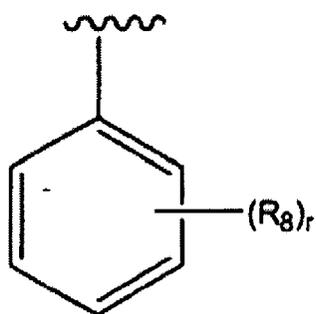


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15

Ar₂ représente

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25

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X représente O ; et
R₁ représente -CH₃.

39. Composé de la revendication 38, dans lequel :

35

m est égal à 0 ;
p est égal à 0 ;
r est égal à 1 ; et
R₈ représente un groupe -alkyle (C₁-C₆) ou -CF₃.

40

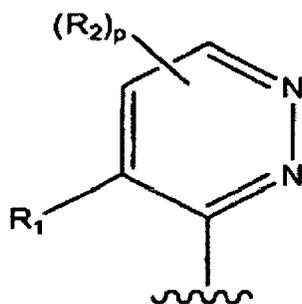
40. Composé de la revendication 39, dans lequel le groupe -alkyle (C₁-C₆) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position para de Ar₂.

41. Composé de la revendication 7, dans lequel :

45

Ar₁ représente

50



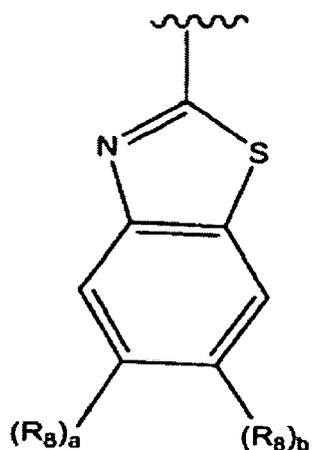
55

Ar2 représente

5

10

15



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25

X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;

m est égal à 0 ;

p est égal à 0 ;

(R₈)_a représente -H ; et

(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

42. Composé de la revendication 41, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

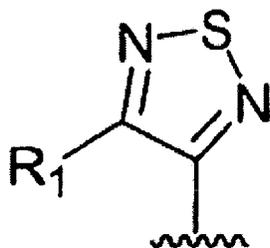
30

43. Composé de la revendication 1, dans lequel :

Ar₁ représente

35

40

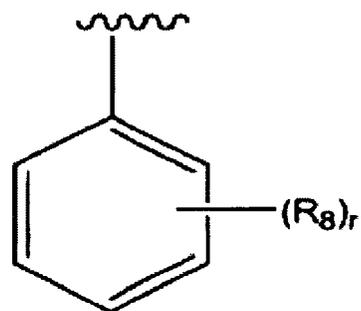


45

Ar2 représente

50

55



X représente O ; et

R₁ représente -CH₃.

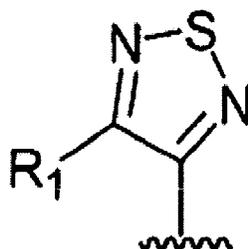
44. Composé de la revendication 43, dans lequel :

5 m est égal à 0 ;
r est égal à 1 ; et
R₈ représente un groupe -alkyle (C₁-C₆) ou -CF₃.

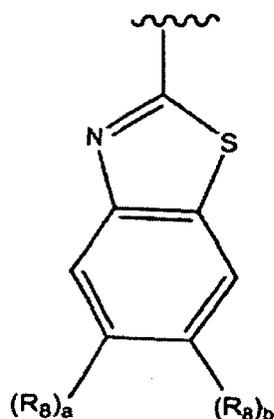
10 45. Composé de la revendication 44, dans lequel le groupe -alkyle (C₁-C₆) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position *para* de Ar₂.

46. Composé de la revendication 1, dans lequel :

15 Ar₁ représente



Ar₂ représente



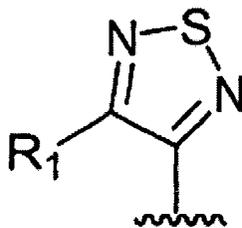
45 X représente O ;
R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;
m est égal à 0 ;
(R₈)_a représente -H ; et
50 (R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

47. Composé de la revendication 46, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

48. Composé de la revendication 7, dans lequel :

55 Ar₁ représente

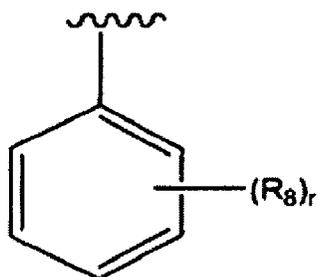
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10

Ar₂ représente

15



20

25

X représente O ; et
R₁ représente -CH₃.

49. Composé de la revendication 48, dans lequel :

30

m est égal à 0 ;
r est égal à 1 ; et
R₈ représente un groupe -alkyle (C₁-C₆) ou -CF₃.

35

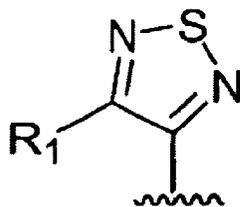
50. Composé de la revendication 49, dans lequel le groupe -alkyle (C₁-C₆) est un groupe *tert*-butyle, le groupe *tert*-butyle étant de préférence substitué au niveau de la position *para* de Ar₂.

51. Composé de la revendication 7, dans lequel :

40

Ar₁ représente

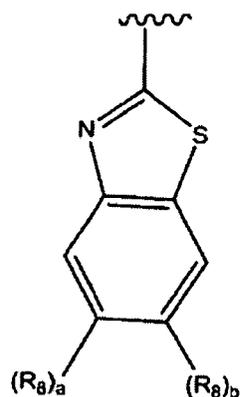
45



50

Ar₂ représente

55



X représente O ;

R₁ représente -CH₃, -CF₃, -Cl, -Br, -I, ou -F ;

m est égal à 0 ;

(R₈)_a représente -H ; et

(R₈)_b représente -H, -CH₃, -CF₃, -OCH₂CH₃, *tert*-butyle, -Cl, -Br, -I ou -F.

25 **52.** Composé de la revendication 51, dans lequel R₁ représente un groupe -CH₃, -CF₃ ou -Cl, et (R₈)_b représente un groupe -Cl, -F, -CF₃ ou *tert*-butyle.

30 **53.** Composition contenant le composé de la revendication 1 ou de la revendication 7, ou un sel pharmaceutiquement acceptable de celui-ci et un porteur ou un excipient pharmaceutiquement acceptable.

35 **54.** Utilisation d'une quantité efficace de composé de la revendication 1 ou de la revendication 7 ou d'un sel pharmaceutiquement acceptable de celui-ci dans la fabrication d'un médicament permettant de traiter la douleur, l'incontinence urinaire, un ulcère, le syndrome du côlon irritable ou la maladie du côlon irritable chez un animal.

40 **55.** Utilisation d'un composé de la revendication 1 ou de la revendication 7 ou d'un sel pharmaceutiquement acceptable de celui-ci dans la fabrication d'un médicament permettant d'inhiber la fonction du VR1 dans une cellule.

45 **56.** Procédé d'inhibition de la fonction du VR1 dans une cellule comprenant la mise en contact d'une cellule capable d'exprimer le VR1 avec une quantité efficace du composé de la revendication 1 ou de la revendication 7 ou d'un sel pharmaceutiquement acceptable de celui-ci, la cellule n'étant pas en contact direct avec le corps humain ou le corps de l'animal.

50 **57.** Kit comprenant un récipient contenant une quantité efficace du composé de la revendication 1 ou de la revendication 7 ou d'un sel pharmaceutiquement acceptable de celui-ci.

55 **58.** Procédé de préparation d'une composition comprenant l'étape de mélange d'un composé de la revendication 1 ou de la revendication 7 ou d'un sel pharmaceutiquement acceptable de celui-ci et d'un porteur ou d'un excipient pharmaceutiquement acceptable.

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