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(54) **A NICOTINE POUCH PRODUCT CONTAINER, AND A METHOD OF CONSUMING NICOTINE POUCH PRODUCTS THEREIN**

(57) The present invention relates to a nicotine product, and more particularly to a nicotine pouch product container, a method of consuming a nicotine pouch product, and nicotine pouches and an oral product comprised in the nicotine pouch product container; specifically, the nicotine pouch product container, comprises a plurality of nicotine pouches for nicotine oral delivery having a pH ranging from 7,5 to 11; and at least one oral product comprising a buffer component.

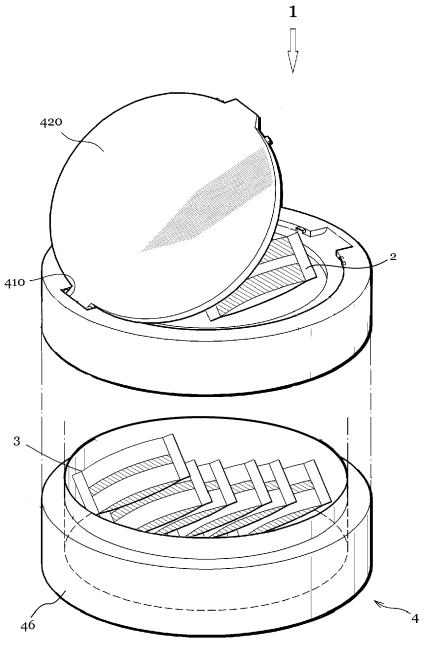

Figure 1

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Description

Technical Field

[0001] The present disclosure generally relates to a nicotine product, and more particularly to a nicotine pouch product container, a method of consuming a nicotine pouch product, and nicotine pouches and an oral product comprised in the nicotine pouch product container. The nicotine pouch products are configured for oral use and deliver substances such as flavors and/or active ingredients during use. Such products may include tobacco or a product derived from tobacco, or may be tobacco-free alternatives.

Technical Background

[0002] The use of reduced-risk or modified-risk tobacco products have grown rapidly in recent years as an alternative to the use of traditional tobacco products.

[0003] An alternative to the traditional tobacco products is smokeless articles, which rely on saliva to extract soluble substances, such as nicotine and/or flavors, from the ingredients, typically tobacco, contained within the smokeless article.

[0004] Some of the conventional smokeless articles have a saliva permeable pouch housing a content. See, for example, US 2012/0073588 A1 relates to an oral tobacco product which allows users to take in tobacco components via saliva; WO 2010/147024 A1 relates to an oral tobacco product for users to absorb tobacco ingredients via saliva, and it also provides a container case for containing such smokeless articles.

[0005] It is known that nicotine is basic, and the nicotinic ingredients used in the smokeless articles are usually in free base form, in salt form, as a complex, or as a solvate so as to provide oral absorption thereof. For example, WO 91/06288 A1 relates to a saliva-soluble stimulant unit, and discloses some possible ingredients included in smokeless articles; it also explains that, considering the absorption of the nicotine, the pH of the saliva during the consumption of the smokeless articles can be basic.

[0006] The feeling with respect to basicity of a product varies for each user. Some users can start feeling basicity arising when a pH of a smokeless article is at 9, and some others can start feeling a basicity when a pH of a smokeless article is above 9. For example, when the pH of a smokeless product is 9.5, the sensation in the user mouth associated to the consumption of such a smokeless product can range from a simple tickling for one user to an important discomfort in the oral cavity for another user. Conventionally, to treat oral discomfort associated to the consumption of a product having a medium to high basicity, water dilution is recommended. However, water is not always reachable and water dilution may not be very effective and can be very slow.

[0007] It is desired to have a solution on a user demand to relieve the possible discomfort associated to the consumption of a smokeless product having a pH at 9 or above.

Summary of the Invention

[0008] The present invention provides a nicotine pouch product container, which solves some of or all of the above problems.

[0009] According to a first aspect of the present disclosure, there is provided a nicotine pouch product container, comprising:

a plurality of nicotine pouches for nicotine oral delivery having a pH ranging from 7,5 to 11; and

at least one oral product comprising a buffer component,

wherein the plurality of nicotine pouches has a pH distribution comprising a low pH side of the pH distribution and a high pH side of the pH distribution, and

wherein the buffer component in the at least one oral product is used at a quantity sufficient to reduce the increased pH arising in the oral cavity of a user as a consequence of using a nicotine pouch selected from the plurality of nicotine pouches having a pH on the high pH side of the pH distribution.

[0010] With this solution, having one or more such oral products in each container of nicotine pouches, discomfort caused by a too basic nicotine pouch can be treated and relieved easily and quickly.

[0011] In a second aspect of the present disclosure, according to the first aspect, the high side of the pH distribution of the plurality of nicotine pouches comprises nicotine pouches having a pH ranging from 9 to 11, wherein the high side of the pH distribution of the plurality of nicotine pouches represent at most 35%, preferably at most 25%, more preferably

at most 15%, more preferably at most 10%, more preferably at most 5%, even more preferably at most 10% and even more preferably at most 10% of the total pH distribution of the plurality of nicotine pouches.

[0012] With this solution, it is possible to arrange a sufficient amount of buffer component (acidity and quantity of oral product) in a container against the basic nicotine pouches that may cause discomfort to the user.

[0013] In a third aspect of the present disclosure, according to the first or the second aspects, the buffer component in the oral product is in an amount sufficient to reduce the increased pH of the oral cavity of the user to a pH ranging from 6 to 8, preferably 6.5 to 7.5, as a consequence of using a nicotine pouch having a pH ranging from 9 to 11.

[0014] In a fourth aspect of the present disclosure, according to any one of the above aspects, the oral product is in a solid form, preferably a patch, a chewing-gum, a capsule or a crash-ball.

[0015] With this arrangement, the oral product is easier for the user to consume.

[0016] In a fifth aspect of the present disclosure, according to any one of the above aspects, the oral product is arranged separately from the nicotine pouches.

[0017] With this arrangement, the oral product is not within the same container as the nicotine pouches. It thus avoids any chemical reaction between the oral products and the nicotine pouches. For example, it might avoid any moisture balance reaction between the oral products and the nicotine pouches that would cause a decrease of moisture content in the nicotine pouches and increase a moisture content in the oral products. A change in moisture content of the nicotine pouches and increase a moisture content in the oral products could decrease the user experience.

[0018] In a sixth aspect of the present disclosure, according to the preceding aspects, the oral product comprising the buffer component substantially does not comprise nicotine.

[0019] In a seventh aspect of the present disclosure, according to any one of the above aspects, each of the plurality of nicotine pouches has an outer surface with a first indication and the oral product comprising the buffer component has an outer surface with a second indication, wherein the first indication is different from the second indication, and preferably, the first indication and the second indication comprises a color, a printed pattern, and/or an embossing pattern.

[0020] In an eighth aspect of the present disclosure, according to the fifth or sixth aspects, the nicotine pouch product container comprises a first chamber and a second chamber, wherein the plurality of nicotine pouches are arranged in the first chamber and the oral product comprising the buffer component is contained in the second chamber.

[0021] With this arrangement, the user can easily differentiate between the nicotine product and the oral product.

[0022] In a ninth aspect of the present disclosure, according to any one of the first to fourth aspects, the oral product comprising the buffer component is arranged in the plurality of nicotine pouches.

[0023] In a tenth aspect of the present disclosure, according to any one of the above aspects, the buffer component consists of or comprises an acidic component, a mix of different acid components, or a mix of acid and basic components, and the acidic component is preferably an organic acid, and more preferably citric acid.

[0024] In an eleventh aspect of the present disclosure, according to the preceding aspect, the oral product comprising the acidic component comprises 2-10 wt.%, preferably 3-8 wt.%, even more preferably 4-6 wt.% citric acid.

[0025] With this arrangement, the oral product would be effective for a rapid tissue neutralization and reduction of discomfort in comparison to water irrigation alone and without an increased tissue damage risk secondary to the exothermic nature of acid-base reactions.

[0026] In a twelfth aspect of the present disclosure, according to the tenth or eleventh aspects, the acid component is in powder and/or in liquid form.

[0027] In a thirteenth aspect of the present disclosure, according to the preceding aspect, the acid component in liquid form is comprised in a capsule or in a crash-ball.

[0028] In a fourteenth aspect of the present disclosure, according to any one of the above aspects, the oral product comprising the buffer component comprises a flavoring agent.

[0029] With this arrangement, taking the oral product becomes easier and more pleasant for the user.

[0030] According to a fifteenth aspect of the present disclosure, there is provided a method of consuming a nicotine pouch product comprising a plurality of nicotine pouches and at least one oral product, comprising the steps of:

consuming a nicotine pouch having a pH ranging from 9 to 11 from the plurality of nicotine pouches for nicotine oral delivery,

consuming the oral product comprising a buffer component with a quantity sufficient to reduce the increased pH arising in the oral cavity of a user as a consequence of consuming the nicotine pouch having a pH ranging from 9 to 11.

[0031] Preferred embodiments are now described, by way of example only, with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032]

Figure 1: is a schematic illustration of an embodiment of a nicotine pouch product container of this invention;

Figure 2: is a box plot graph showing the pH range of some nicotine pouch product lines;

Figure 3: is a graph showing the distribution of nicotine pouches contained in a nicotine pouch product container; and

Figures 4(a) to (c): are schematic illustrations of some embodiments of a nicotine pouch and oral products of this invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0033] Provided herein is a container comprising pouch products configured for oral use. The term "configured for oral use" as used herein means that the pouch products are provided in a form such that during use, saliva in the mouth of the user causes one or more of the components of the mixture (e.g. flavoring agents, sweeteners, buffer components and/or nicotine) to pass into the mouth of the user. In certain embodiments, the pouch product is adapted to deliver releasable components to a user through mucous membranes in the user's mouth and, in some instances, said releasable component can be an active ingredient that can be absorbed through the mucous membranes in the mouth when the product is used.

[0034] As used herein, an "active ingredient" refers to one or more substances belonging to any of the following categories: API (active pharmaceutical ingredient), food additives, natural medicaments, and naturally occurring substances that can have an effect on humans. Example active ingredients include any ingredient known to impact one or more biological functions within the body, such as ingredients that furnish pharmacological activity or other direct effect in the diagnosis, cure, mitigation, treatment, or prevention of disease, or which affect the structure or any function of the body of humans (e.g., provide a stimulating action on the central nervous system, have an energizing effect, an antipyretic or analgesic action, or an otherwise useful effect on the body). In some embodiments, the active ingredient maybe of the type generally referred to as dietary supplements, nutraceuticals, "phytochemicals" or "functional foods". These types of additives are sometimes defined in the art as encompassing substances typically available from naturally occurring sources (e.g., botanical materials) that provide one or more advantageous biological effects (e.g., health promotion, disease prevention, or other medicinal properties), but are not classified or regulated as drugs. Non-limiting examples of active ingredients include those falling in the categories of botanical ingredients, stimulants, amino acids, nicotine components, and/or pharmaceutical, nutraceutical, and medicinal ingredients (e.g., vitamins, such as A, B3, B6, B12, and C, and/or cannabinoids, such as tetrahydrocannabinol (THC) and cannabidiol (CBD)).

[0035] As used herein the term "nicotine" is preferably meant as nicotine extracted from tobacco. While the nicotine may be provided in several different forms, e.g. as a complex with an ion exchange resin, as a salt, or as a free base, the nicotine is not provided in the form of tobacco or powdered tobacco.

[0036] The particular choice of active ingredients will vary depending upon the desired flavor, texture, and desired characteristics of the particular product. The percentages of active ingredients present will vary depending upon the desired characteristics of the particular product. Typically, an active ingredient or combination thereof is present in a total concentration of at least about 0.001% by weight of the overall product, such as in a range from about 0.001% to about 30%. As used herein, any "weight percentage of a releasable component" refers to a percentage by weight of that releasable component relative to the total weight of the oral composition, not including the weight of the pouch material.

[0037] In addition, the term "pouch" is intended to mean a container typically formed by a web of a fibrous material enclosing a cavity. The pouch is a pouch designed for administration of an active ingredient in the oral cavity, and thus it is adapted for oral use, it is non-toxic and not water-soluble. The fibrous material may form a woven or non-woven web or fabric. The pouch may for example be sealed by bonding two corresponding pieces of web or fabric to each other along their edges to form a cavity for the nicotine and the non-water-soluble composition. In order to release the active ingredient, the pouch is made saliva-permeable so as to allow saliva from the oral cavity to penetrate the pouch and enter the cavity, where the saliva can come into contact with the active ingredient, whereby said active ingredient is released from the oral pouch.

[0038] Preferred embodiments of the present invention are described hereinafter and in conjunction with the accompanying drawings. As shown in figure 1, a nicotine pouch product container 1 comprises a plurality of nicotine pouches 3, at least one oral product 2 that is different from the nicotine pouches 3, and a container case 4. The number of the oral products 2 shown in figure 1 is only schematic. The number of the oral products 2 comprised in a container case 4

can be any number, preferable the number of oral products 2 ranges from 1 to 10. In a preferred embodiment, the number of the oral products 2 comprised in a container case 4 is at most 10 oral products 2, more preferably at most 8 oral products 2, more preferably at most 6 oral products 2, more preferably at most 4 oral products 2, even more preferably at most 3 oral products 2, particularly at most 2 oral products 2, and most preferably only 1 oral products 2. In a preferred embodiment, the number of the nicotine pouches 3 comprised in a container case 4 can be any number and preferably at least 10 nicotine pouches, more preferably at least 20 nicotine pouches, even more preferably at least 40 nicotine pouches, particularly at least 60 nicotine pouches, and most preferably at least 100 nicotine pouches. In another preferred embodiment, the number of nicotine pouches 3 in the nicotine pouch product container 1 is ranging from 15 to 35, most preferably from 20 to 30, and even most preferably from 20 to 25. In another preferred embodiment, the nicotine pouch product container 1 comprises 15 to 35 nicotine pouches 3 and 1 to 10 oral products 2, most preferably 20 to 25 nicotine pouches 3 and 1 to 10 oral products 2.

[Nicotine Product/Pouches]

[0039] The nicotine pouches 3 comprise a pouch and a composition comprising nicotine enclosed in said pouch. The pouch is formed from a sheet of saliva permeable fibrous material. The saliva permeable fibrous material can be formed of a woven or non-woven web or fabric. In a preferred embodiment, saliva permeable fibrous material is formed of a non-woven web or fabric. In preferred embodiments, the nicotine mixture contains free nicotine or nicotine particles or nicotine salts or a combination thereof as an active ingredient. In another preferred embodiment, the nicotine can be used in combination with tobacco. In such a case the nicotine is mixed with tobacco particles, which are obtained by shredding or crushing tobacco materials, and measure 2 mm or less in particle diameter. The skilled person would understand that the nicotine pouches could also be any other oral nicotine products available on the market. For consumption, the nicotine product 3 is placed between the upper lip and gum of the user to deliver nicotine when the nicotine product is exposed to saliva in the oral cavity of the user. Exposure to saliva then causes nicotine to be released into the mouth of the user, and further can cause some of the substrate material therein to pass through, e.g., the saliva permeable fibrous material of the pouch and provide the user with flavor and satisfaction. After about 10 minutes to about 60 minutes, typically about 15 minutes to about 45 minutes, of use/enjoyment, substantial amounts of the releasable component and or the substrate material have been ingested by the human subject, and the unit maybe removed from the mouth of the human subject for disposal. The nicotine product 3 does not emit smoke in use. The user can thus use the nicotine product 3 anywhere.

[0040] In preferred embodiments, the nicotine content in the nicotine pouches 3 is extracted from tobacco. In some other preferred embodiments, the nicotine content in the nicotine pouches 3 comprises or is made of tobacco, and preferably a substantially small amount of tobacco. More specifically, the tobacco content is preferably at most 5% weight by weight of the total nicotine composition, more preferably at most 4% weight by weight of the total nicotine composition, even more preferably at most 3% weight by weight of the total nicotine composition; and/or preferably at least 1% weight by weight of the total nicotine composition, and more preferably at least 2% weight by weight of the total nicotine composition.

[0041] To promote a pleasant taste to the user, it is desirable that the nicotine composition has a moisture content ranging from 1%-60% weight by weight of the total nicotine composition. In a preferred embodiment, the moisture content is ranging from 25%-60% weight by weight of the total nicotine composition, preferably ranging from 35%-55% weight by weight of the total nicotine composition, more preferably ranging from 35%-50% weight by weight of the total nicotine composition, even more preferably ranging from 35%-45% weight by weight of the total nicotine composition. In another preferred embodiment, the moisture content of the nicotine composition is ranging from 1%-35% weight by weight of the total nicotine composition, preferably ranging from 1%-25% weight by weight of the total nicotine composition, more preferably ranging from 1%-18% weight by weight of the total nicotine composition, even more preferably ranging from 1%-12% weight by weight of the total nicotine composition, even more preferably below 10% weight by weight of the total nicotine composition.

[0042] The nicotine composition of the present invention has a pH preferably ranging from 7.5 to 11. In a preferred embodiment, the nicotine composition is desirably alkaline. As used herein, the term "alkaline" means that the nicotine composition has a pH above 8.0. In such a preferred embodiment, the nicotine composition can have a pH ranging from 7.5 to 11, preferably ranging from 8.0 to 11, most preferably ranging from 8.5 to 10, and even most preferably above 8.

[0043] Having an alkaline nicotine composition implies that during the manufacturing process an alkaline buffer solution is used to buffer the nicotine composition at said desired alkaline pH. More particularly, when the alkaline nicotine composition comprises a pre-defined moisture content, e.g. a moisture content above 25% weight by weight of the total nicotine composition, the homogeneity of the alkaline nicotine composition during the addition of the alkaline buffer solution is a key step to provide an homogenous batch that will be used for providing a plurality of nicotine pouches at a predetermined pH. In particular, the inventors observed that for one batch of manufacturing 100 nicotine pouches the pH distribution of said plurality of nicotine pouches follows a gaussian-like curve, also called a bell-shaped pH distribution

curve. In such a case, the inventors observed that in said batch of manufacturing 100 nicotine pouches at a predetermined alkaline pH, e.g. a predetermined pH around 8.5, the pH distribution is divided into a low, a middle and a high pH side of the pH distribution. The middle part of the pH distribution corresponds to the middle gaussian-like curve and defines an area comprising a plurality of nicotine pouches having a pH ranging from 8.2 to 8.8, i.e. a plurality of nicotine pouches having the targeted pH of about 8.5. The low pH side (i.e. the low tail of gaussian-like curve) and the high pH side of the pH distribution (i.e. the high tail of gaussian-like curve) correspond respectively to the left and right sides of the middle part of gaussian-like curve of the pH distribution. The area of the high tail of gaussian-like curve comprises a plurality of nicotine pouches having a pH above 8.8 and in particular ranging from 8.8 to 11. Such an area can comprises for example 25 nicotine pouches. The area of the low tail of gaussian-like curve comprises a plurality of nicotine pouches having a pH below 8.2 and ranging from 7.5 to 8.2. Such an area can comprises for example 25 nicotine pouches. Thus, in said example, 50% of the plurality of nicotine pouches have a pH ranging from 8.2 to 8.8, 25% of the plurality of nicotine pouches have ranging from 7.5 to 8.2, and 25% of the plurality of nicotine pouches have ranging from 8.8 to 11. In such a case, if the user puts one nicotine pouch taken in the 25% of the plurality of nicotine pouches having a pH ranging from 8,8 to 11, the user might then start rather quickly feeling a tickling or a discomfort sensation in the mouth, due to the use of a high pH nicotine pouch. This can be explained by the acid/basic reaction between the components in the saliva/in the buccal mucosa that are typically at a pH ranging from 6.5-7.5 and the nicotine pouch having a pH ranging from 8.8 to 11.

[0044] Although the degree of discomfort caused by the use of an alkaline nicotine pouch may vary person by person, in most cases a pH of 11 can cause a discomfort to the oral tissue that can be sensed by most of the people, and in some cases, even a pH of 9-11 may already cause a discomfort to certain users. Hence, it is ideal to target those basic nicotine pouches that have a pH of 9 to 11.

[0045] From another perspective, the pH distribution of the nicotine pouches in a container (7.5-11) comprises a low and a high pH side of the pH distribution. In order to quantify the distribution, it has been found that the nicotine pouches that pertain to the high side of the pH distribution represent at most 35%, more likely (preferably) at most 25%, even more likely (preferably) at most 20%, most likely (preferably) at most 15%, most likely (preferably) at most 10% and most likely (preferably) at most 5% of the total distribution of the plurality of nicotine pouches. In another embodiment, the nicotine pouches that pertain to the high side of the pH distribution represent at least 35%, more likely (preferably) at least 25%, even more likely (preferably) at least 20%, most likely (preferably) at least 15%, most likely (preferably) at least 10% and most likely (preferably) at least 5% of the total distribution of the plurality of nicotine pouches. Specifically, as shown in figure 3, the plurality of nicotine pouches 3 contained in a container 1 has a pH distribution defined by a bell-shaped pH distribution curve, i.e. a gaussian-like pH distribution. The bell-shaped pH distribution curve has a low pH tail of the distribution (marked with the dotted line) and a high pH tail of the distribution (marked in black), wherein C is the cutoff pH value used to target the high tail. Hence, the targeted pH value (C) is at most the 75th percentile, preferably at most the 85th percentile, more preferably at most the 90th percentile, and most preferably at most the 95th percentile of the pH distribution. In another preferred embodiment, the high tail of the pH distribution, preferably the 75th percentile (i.e., 25% of the nicotine pouches 3 in a container 1), has a pH of more than 9, more specifically a pH of 9 to 11. In another preferred embodiment, the high tail of the pH distribution, preferably the 95th percentile (i.e., 5% of the nicotine pouches 3 in a container 1), has a pH of more than 9, more specifically a pH of 9 to 11.

[Oral Product/Oral Patch]

[0046] As explained above, considering that alkalis of some of the nicotine pouches may cause discomfort, the oral product is provided in the container 1 for buffering the alkaline of the nicotine pouch 3 in case of discomfort. With this solution, if the users experience discomfort in their mouth, they can use the oral product 2, also called the oral patch, contained in the nicotine pouches container 1 to counterbalance the effect related to the use of the alkaline nicotine pouches. The buffer component in the at least one oral product is used at a quantity sufficient to reduce the increased pH arising in the user's mouth as a consequence of using a nicotine pouch selected from the plurality of nicotine pouches having a pH on the high pH side of the pH distribution, i.e. having a pH of 9 to 11, because only those nicotine pouches 3 that may cause discomfort may be required to be neutralized. Hence, the reference cutoff value C in figure 3 for the high pH side of the basic nicotine pouches 3 is also the reference value for the acidity and quantity of the oral product against the selected nicotine pouch 3 and ready for relieving and treating the discomfort. The acidity and quantity of the oral product 2 should be tuned to target the high tail of the pH distribution of nicotine pouches 3. In other words, the sum quantity of the buffer component of the oral product 2 (i.e., the acidity and quantity of the oral product 2) provided in a container should be sufficient to reduce the increased pH arising in the oral cavity of a user as a consequence of using a nicotine pouch selected from the plurality of nicotine pouches having a pH on the high pH side of the pH distribution. Specifically, the container 1 should have an amount of the buffer component sufficient to reduce the increased pH of the oral cavity of the user to a pH ranging from 6 to 8, preferably 6.5 to 7.5, as a consequence of using a nicotine pouch of the high pH side.

[0047] To neutralize a discomfort linked to basicity, it has been found that acids could be used. For example, an acid, namely a 5% organic acid, such as acetic acid, would result in rapid tissue neutralization and reduction of discomfort in comparison to water irrigation alone, and without additional tissue damage risk secondary to the exothermic nature of acid-base reactions. Article "The Treatment of Alkaline Burns of the Skin by Neutralization, Kris Andrews, M.D., Arian Mowlavi, M.D., and Stephen M. Milner, M.B., B.S., B.D.S., F.R.C.S.(Ed.), FA.C.S." is incorporated for reference of this. Especially, it shows that alkaline chemical discomfort treated with acid, specifically a 5% acetic acid, demonstrated a more rapid return to physiologic pH, increased depth of dermal retention, decreased leukocyte infiltrate, and improved epithelial regeneration when compared with animals treated with water irrigation.

[0048] In the preferred embodiments, the buffer component comprises citric acid, and preferably citric acid powder ($HOC(CO_2H)(CH_2CO_2H)_2$), which typically is used for pH correction in cakes. The Milliard ™ citric acid is an example of such citric acid powder. The dominant use of citric acid is as a flavoring and preservative in food and beverages, especially soft drinks and candies. In other embodiments, the buffer component contains other acids that can be used in food, for example, acetic acid, malic acid, DL Lactic Acid (food grade), L(+) Lactic Acid (food grade), Phosphoric Acid, L(+) Tartaric acid, Fumaric acid, or a combination thereof. Instead of solid form, the buffer component may also be in liquid form obtained by dissolving the buffer component in a solvent. As the solvent, water, alcohol, glycerin, propylene glycol or the like may be used. It is preferably comprised in a capsule or in a crash-ball.

[0049] Accordingly, in the preferred embodiments, the oral product comprising the acidic component, e.g., acetic acid or citric acid powder as mentioned above, comprises 2-10 wt.%, preferably 3-8 wt.%, and even more preferably 4-6 wt.% citric acid.

[0050] Other organic acids, that have similar properties to citric acid, may be used to replace or in combination with citric acid. Furthermore, the buffer component may consist of one acidic component or acidic concentration, a mix of different acid components, or a mix of acid and basic/neutral components. For example, if the oral product is in solid form or half solid form, the ingredients could be similar to the ingredient used for Sour Gummy Bears ™ (pH 3.0), Skittles ™ (pH 2.5), Starburst ™ (pH 2.4), Sour Skittles ™ (pH 2.2), Wonka Fun Dip ™ (pH 1.8), Warheads Sour Spray ™ (pH 1.6) etc. Specifically, the ingredients could comprise sugar, corn Syrup, citric acid, hydrogenated palm kernel oil; less than 2% of: Tapioca Dextrin, natural and artificial flavors, modified corn starch, colors, sodium citrate, Carnauba Wax, or a combination thereof. If the oral product is in liquid form, the ingredients could comprise water, sugar, citric acid, malic acid, glycerin, lactic acid, artificial flavors, potassium sorbate preservative, or a combination thereof.

[0051] In the preferred embodiments, the acidity of the oral product 2 has a sufficient amount of buffer component as mentioned above such that, once the user takes the oral product 2, it takes at most 1 min, preferably at most 45 seconds, more preferably at most 30 seconds, even more preferably at most 15 seconds, and most preferably at most 5 seconds to substantially relieve the discomfort in the mouth caused by alkaline agents and the pH to return to a physiologic level namely the pH range mentioned above.

[0052] The oral product 2 may have a similar configuration as the nicotine pouches 3, but without comprising any nicotine. For example, the oral product 2 may comprise a pouch and a buffer component mixture enclosed in the pouch. The pouch is formed from a sheet of saliva permeable fibrous material similar to the nicotine pouches 3. The saliva permeable fibrous material can be formed of a woven or non-woven web or fabric. In a preferred embodiment, saliva permeable fibrous material is formed of a non-woven web or fabric.

[0053] With reference to figures 4(a) - 4(c), detailed descriptions of the forms and configurations of the oral product 2 are provided below.

[0054] In some preferred embodiments, the oral product 2 comprises a pouch 21 and a buffer component mixture. The pouch 21 is formed from a sheet of saliva permeable fibrous material, preferably a saliva permeable fibrous material formed of a woven or non-woven web or fabric, and more preferably a saliva permeable nonwoven fabric. The buffer component mixture comprises the buffer component as a major ingredient. Specifically, the oral product may further comprise at least one of a filler, binder, humectant, gelling agent, emulsifier, moisture content, sweetener, and flavorants. In a preferred embodiment, the filler could be cellulose, and the humectant could be glycerin.

[0055] As shown in figure 4(a), the outer wrapper of the oral product 2 is in the form of a rectangular sheet. The pouch 21 wraps the buffer component in a packaging form called pillow wrapping. Other types of wrapping, such as the tubular-shaped twist wrapping type, may also be used. Other forms, such as capsule or crash-ball, that can be used in the oral cavity may also be used to contain the buffer component mixture; chewing-gum or sugar containing the acid (buffer component) may also be used. Specifically, the radius on the corner could be about 2 mm, while the dimensions could be about 14 mm in length, 6 mm in width and 3 mm in height. This size together with a jelly/rubber texture would allow positioning the acid patch in the same position the nicotine pouch was placed. The ingredients for such an embodiment are, for example: 38%wt. of gelatin powder, 35%wt. of water, 18%wt. of sugar, 8%wt. of citric acid, aromas, coloring. In another embodiment, the oral patch could be rigid and more compact, e.g., a cylinder about 11 mm long and with a diameter of about 7 mm with rounded corners having about 3 mm radius. The ingredients for such an embodiment are, for example: 50%wt. of sugar, 30%wt. of water, 12%wt. of corn syrup, 8%wt. of citric acid, aromas, coloring. The weight and volume of the oral product 2 is preferably lower than the nicotine pouch, preferably at least 0.3 g, more preferably

at least 0.4 g, and most preferably at least 0.5 g; and preferably at most 1 g, and more preferably at most 0.8 g, and most preferably at most 0.6 g.

[0056] Water-repellent fluorine-based resin is a suitable water-repellent material. AsahiGuard ™ manufactured by Asahi Glass Co., Ltd. is an example of such water-repellent fluorine-based resin. It is commonly used to coat wrappers for food and other products containing oils and fats, such as confectionery, dairy products, cooked food, fast food and pet food, and thus safe when applied to the pouch 21 intended to be put in the mouth. The water-repellent material to be used is not restricted to the fluorine-based resin; other materials having water-repellency, such as paraffin resin, silicon-based resin and epoxy resin, are also usable. The water-repellent material may contain an additive such as calcium carbonate or titanium dioxide. Such an additive increases the whiteness of the water-repellent material. Other materials, such as wax, could be used as well as there are options which are food grade and do not melt at body temperature.

[0057] In order to differentiate the nicotine pouch 3 as shown in figure 4(b), in preferred embodiments, the front and rear faces, i.e., at least a part of the outer surface, of the pouch 21 are colored with a different color from the nicotine pouch 3 as an indication 23. In other preferred embodiments, a printed pattern and/or an embossing pattern 23 is provided on the pouch of the oral product 2. As shown in figure 4(c), the round-shaped colored patterns 23 are arranged along a longitudinal axis of the pouch 21, in one of the two longitudinal zones defined by the longitudinal axis of the pouch on the front and/or rear faces of the pouch 21. Other forms of indication 23, such as a combination of letters or a combination of numerals maybe presented on the front and/or rear faces of the pouch 21, indicating that it is the oral product 2, not the nicotine pouch 3. A different size arrangement between the nicotine pouch 3 and the oral product 2 may also be an indication 23. For example, the oral product could be half of the size or just half of the width of the nicotine product, such as 14 mm in length, 3 mm in width, and 3 mm in height. In other embodiments, such indication methods may also be applied to capsules, (effervescent) tabletsor crush ball forms.

[0058] For the purpose of enriching the taste and/or compensating the acid flavor of the oral product 2, a food flavoring may be deposited or applied to the oral product. Menthol, mint, vanilla, apricot, tea, cacao, licorice and honey maybe used alone or in combination as the food flavoring. Since the oral products have an acid pH as mentioned above, the food flavoring is desirably neutral or acid if it is deposited or applied thereto. The food flavor is used in powder form or in the form of a liquid obtained by dissolving the food flavor in a solvent. As the solvent, water, alcohol, glycerin, propylene glycol or the like may be used. Further, the food flavor is preferably used together with a humectant such as glycerin, propylene glycol or the like.

[Container Case]

[0059] Referring back to figure 1, the nicotine pouches 3 and the oral product 2 are kept in the container case 4.

[0060] In a preferred embodiment, the container case 4 comprises a case body 46 and a lid 410. The case body 46 is in the form of a flat cylinder, and the skilled person would understand that the case body 46 may also be of any other shapes and sizes, as long as it has a volume to contain the tobacco products 3 and oral product 2 inside. The cover 420 is joined by a hinge 418 with the lid 410 so as to be openable closed with the lid 410. In other embodiments, the cover 420 and the lid 410 may be connected by other means or can be separated completely when opened. The lid 410 has about the same shape as the case body 46 and has an outside dimension equal to the outside dimension of the case body 46. In the closed position, the cover 420 is flush with the lid 410 and can be turned upward on the hinge 418 to expose an inner space of the lid 410. In order to take the nicotine product 3, the user can separate the lid 410 from the container body 46 to expose the inner space of the container body 46, where the nicotine products 3 are contained. In other words, the container case 4 can keep the nicotine products 3 and oral products 2 separated. As shown in figure 1, the container case 4 has a lid inner space, which is the upper chamber of the container case 4, and a container body inner space, which is the lower chamber, and the plurality of nicotine pouches 3 are arranged in the lower chamber, and the oral product comprising the buffer component is contained in the upper chamber. Thus, inside the container case 4, the nicotine pouches 3 can be stacked and placed under the lid 410 and separated from the oral product 2 which is placed inside the inner space or the hollow of the lid 410. With the opening of the cover 420, the hollow space of the lid 410 is exposed, so that the user can remove an oral product 2 from the lid 410 through the opening of the lid 410. With such an arrangement, the oral product 2 can be more reachable when necessary.

[0061] In another embodiment, the lid 410 does not have a cover and is formed as an integrated piece, and to open the container case 4 for the nicotine pouches 3 and/or the oral product 2, the user can simply open the lid 410. Separation means that separate the oral product 2 and nicotine products 3 may be a division plate that is vertically arranged in the inner space and on the bottom surface of case body 46, so that both the nicotine pouches 3 and the oral product 2 can easily be reached at the same time by the user. The skilled person would understand that any other kind of separation means can be arranged in the case body 46 so as to separate the oral product 2 and the nicotine pouches 3.

[0062] In other embodiments, the nicotine pouches 3 and the oral product 2 are arranged in the same inner space, and the user can still differentiate the oral product 2 and the nicotine pouches 3 by the above-mentioned indication 23

on the oral product 2.

[0063] Therefore, if a user contacts the above-mentioned nicotine pouch and consequently starts to feel a discomfort sensation in the mouth (the pH of the user mouth increases), he can open the cover 420 or the lid 410 and put one oral product 2, or even multiple oral products 2, into his or her mouth. With an acid-basic reaction caused by the oral product 2, the discomfort sensation will be relieved and said discomfort is neutralized to a physiologic level namely the pH range mentioned above.

[0064] In another embodiment, the container case (4) further comprises a cavity (not shown in figure 1) for used nicotine pouches and/or for oral product 2.

[Modification]

[0065] Different from the above embodiments, in which the oral product(s) 2 is separated from the nicotine pouch 3, the oral product 2 with the buffer component may also be provided within the nicotine pouches 3, and preferably each nicotine pouches 3.

Claims

1. A nicotine pouch product container, comprising:

a plurality of nicotine pouches for nicotine oral delivery having a pH ranging from 7,5 to 11; and
at least one oral product comprising a buffer component,
wherein the plurality of nicotine pouches has a pH distribution comprising a low pH side of the pH distribution and a high pH side of the pH distribution, and
wherein the buffer component in the at least one oral product is used at a quantity sufficient to reduce the increased pH arising in the oral cavity of a user as a consequence of using a nicotine pouch selected from the plurality of nicotine pouches having a pH in the high pH side of the pH distribution.

2. The nicotine pouch product container according to claim 1, wherein the high side of the pH distribution of the plurality of nicotine pouches comprises nicotine pouches having a pH ranging from 9 to 11, wherein the high side of the pH distribution of the plurality of nicotine pouches represent at most 35%, preferably at most 25%, more preferably at most 15%, more preferably at most 10%, more preferably at most 5%, even more preferably at most 10% of the total pH distribution of the plurality of nicotine pouches.

3. The nicotine pouch product container according to any one of the preceding claims, wherein the buffer component in the oral product is in an amount sufficient to reduce the increased pH of the oral cavity of the user to a pH ranging from 6 to 8, preferably 6.5 to 7.5, as a consequence of using a nicotine pouch having a pH ranging from 9 to 11.

4. The nicotine pouch product container according to any one of the preceding claims, wherein the oral product is in a solid form, preferably a patch, a chewing-gum, a capsule or a crash-ball.

5. The nicotine pouch product container according to any one of the preceding claims, wherein the oral product is arranged separately from the nicotine pouches.

6. The nicotine pouch product container according to the preceding claim, wherein the oral product comprising the buffer component substantially does not comprise nicotine.

7. The nicotine pouch product container according to claims 5 or 6, wherein each of the plurality of nicotine pouches has an outer surface with a first indication and the oral product comprising the buffer component has an outer surface with a second indication, wherein the first indication is different from the second indication, and preferably, the first indication and the second indication comprises a color, a printed pattern, and/or an embossing pattern.

8. The nicotine pouch product container according to any one of the preceding claims 5 to 7, comprising a first chamber and a second chamber, wherein the plurality of nicotine pouches are arranged in the first chamber and the oral product comprising the buffer component is contained in the second chamber.

9. The nicotine pouch product container according to any one of claims 1 to 4, wherein the oral product comprising the buffer component is arranged in the plurality of nicotine pouches.

10. The nicotine pouch product container according to any one of the preceding claims, wherein the buffer component consists of or comprises an acidic component, a mix of different acid components, or a mix of acid and basic components, and the acidic component is preferably an organic acid, and more preferably citric acid.

11. The nicotine pouch product container according to the preceding claim, wherein the oral product comprising the acidic component comprises 2-10 wt.%, preferably 3-8 wt.%, even more preferably 4-6 wt.% citric acid.

12. The nicotine pouch product container according to any one of claims 10 or 11, wherein the acid component is in powder and/or in liquid form.

13. The nicotine pouch product container according to claim 12, wherein the acid component in liquid form is comprised in a capsule or in crash-ball.

14. The nicotine pouch product container according to any one of the preceding claims, wherein the oral product comprising the buffer component comprises a flavoring agent.

15. A method of consuming a nicotine pouch product comprising a plurality of nicotine pouches and at least one oral product, comprising the steps of:

consuming a nicotine pouch having a pH ranging from 9 to 11 from the plurality of nicotine pouches for nicotine oral delivery,
consuming the oral product comprising a buffer component with a quantity sufficient to reduce the increased pH arising in the oral cavity of a user as a consequence of consuming the nicotine pouch having a pH ranging from 9 to 11.

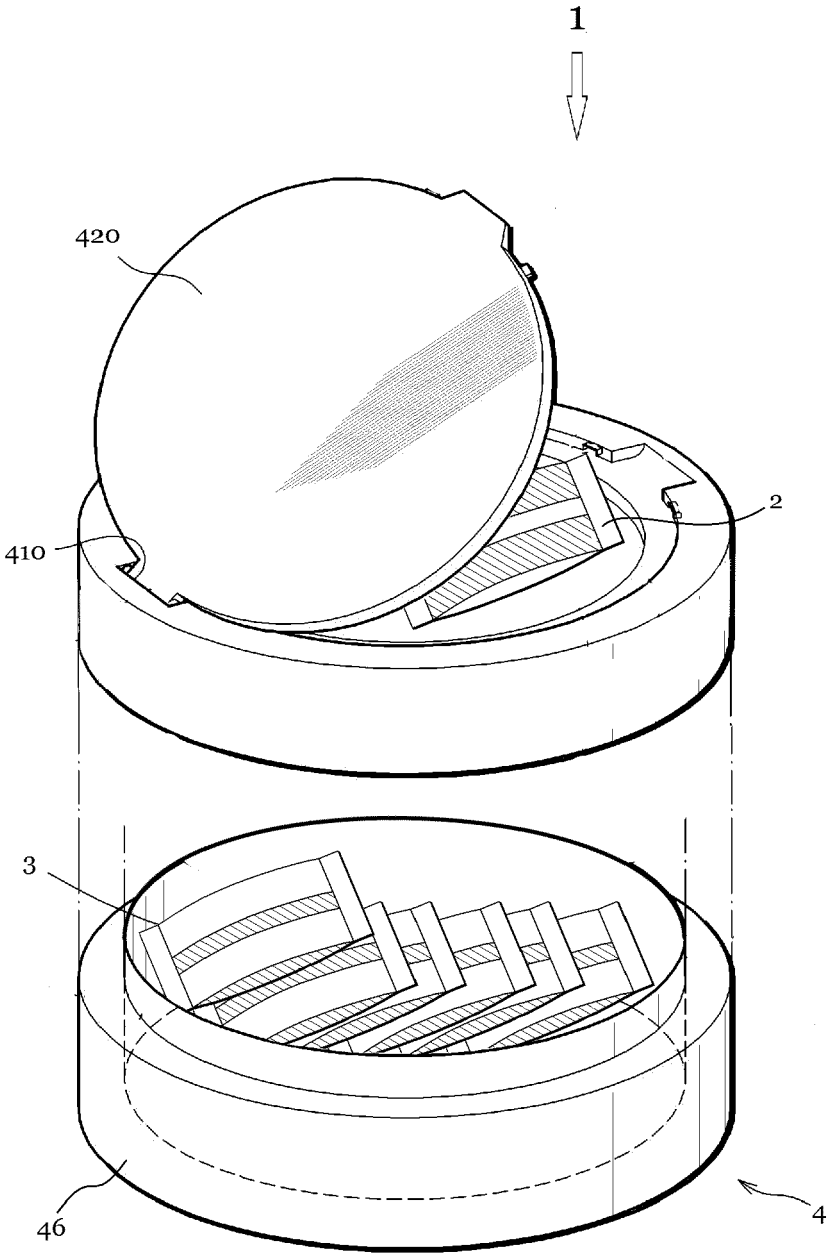
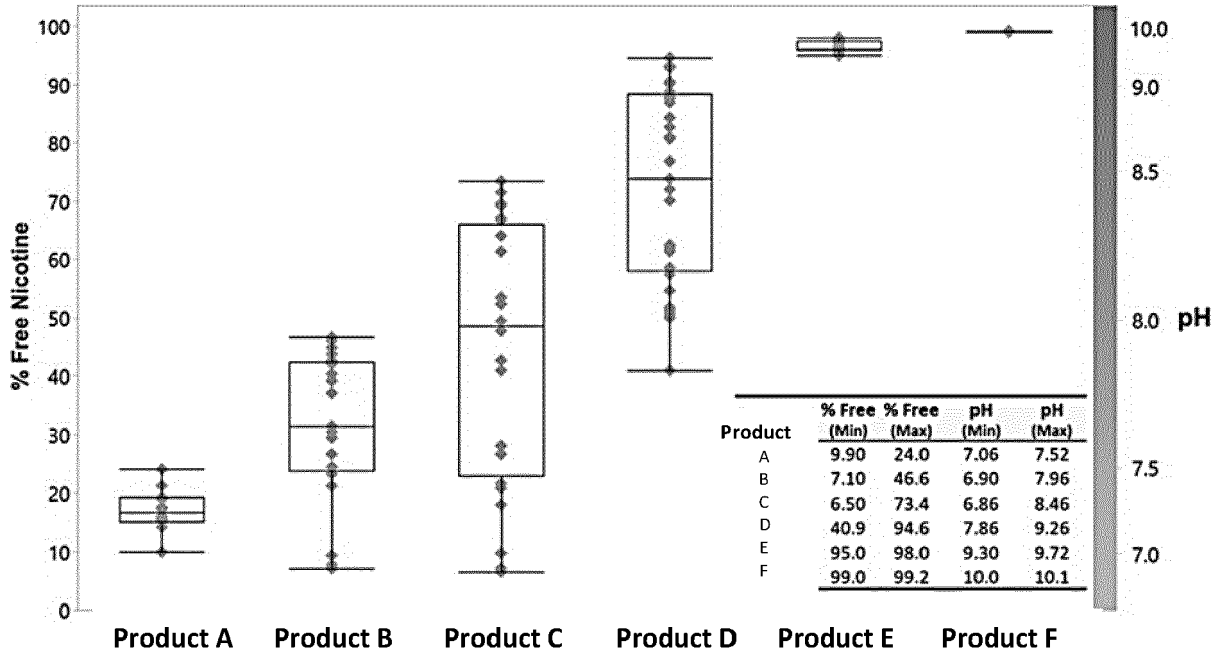


Figure 1



Product	% Free (Min)	% Free (Max)	pH (Min)	pH (Max)
A	9.90	24.0	7.06	7.52
B	7.10	46.6	6.90	7.96
C	6.50	73.4	6.86	8.46
D	40.9	94.6	7.86	9.26
E	95.0	98.0	9.30	9.72
F	99.0	99.2	10.0	10.1

Figure 2

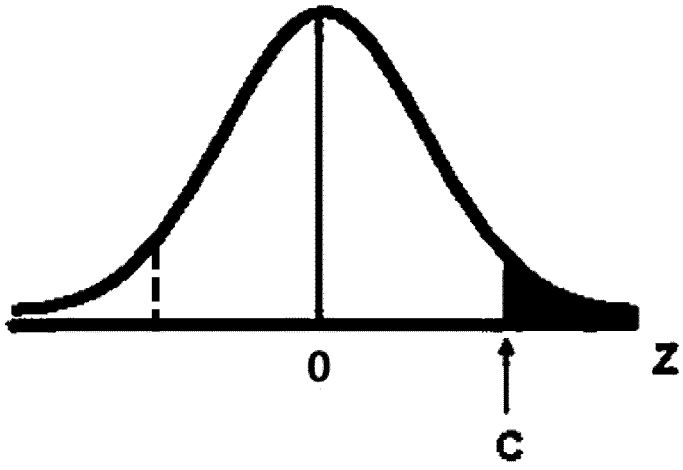


Figure 3

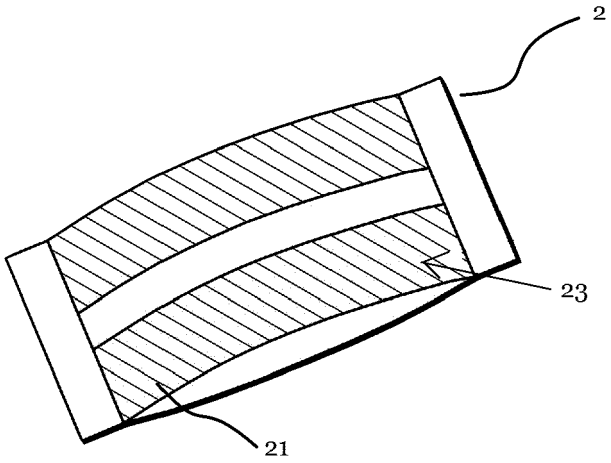


Figure 4(a)

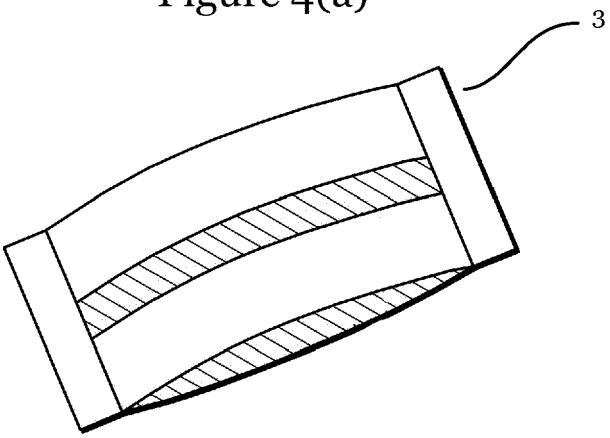


Figure 4(b)

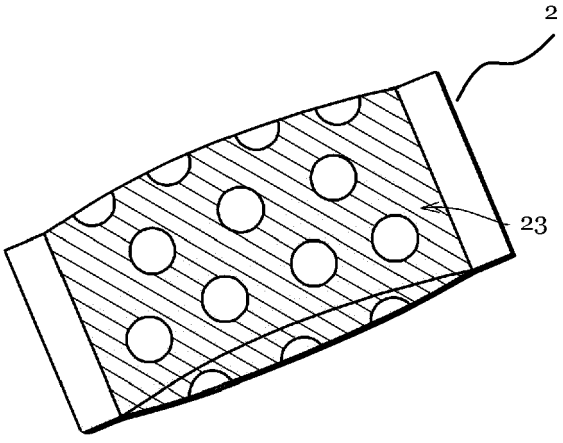


Figure 4(c)

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EUROPEAN SEARCH REPORT

Application Number
EP 22 20 8343

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2010/018540 A1 (DOOLITTLE DAVID JAMES [US] ET AL) 28 January 2010 (2010-01-28) * paragraph [0014] - paragraph [0015] * * paragraph [0019] * * paragraph [0024] * * paragraph [0054] * * paragraph [0103] * * figures 1-5 *	1-15	INV. A24B13/00 A24F23/00
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A	EP 3 861 873 A1 (NERUDIA LTD [GB]) 11 August 2021 (2021-08-11) * paragraph [0042] - paragraph [0043] * * paragraph [0052] * * paragraph [0055] * * paragraph [0076] - paragraph [0077] * * figures 1, 2 *	1-15	
A	US 2022/295864 A1 (ST CHARLES FRANK KELLEY [US]) 22 September 2022 (2022-09-22) * the whole document *	1-15	TECHNICAL FIELDS SEARCHED (IPC) A24B A24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 April 2023	Dimoula, Kerasina

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