(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 554 059 A1

(12) EUROPEAN PATENT APPLICATION

published in accordance with Art. 153(4) EPC

(43) Date of publication:
06.02.2013 Bulletin 2013/06

(21) Application number: **11762791.9**

(22) Date of filing: **28.03.2011**

(51) Int Cl.:
A24B 13/00 *(2006.01)* ***A24B 15/28*** *(2006.01)*

(86) International application number:
PCT/JP2011/057656

(87) International publication number:
WO 2011/122567 (06.10.2011 Gazette 2011/40)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **29.03.2010 JP 2010075876**

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(54) ORAL TOBACCO MATERIAL

(57) An oral tobacco material includes a powdered tobacco, and a basic salt of carbonic acid and an acidic salt of phosphoric acid as a pH adjusting agent. The basic salt of carbonic acid and the acidic salt of phosphoric acid are included in a total amount of 6% by weight or more of the dry weight of the powdered tobacco and are incorporated such that the initial pH of the oral tobacco material becomes from 7 to 8.5, and the oral tobacco material has a water content of 15% by weight or more.

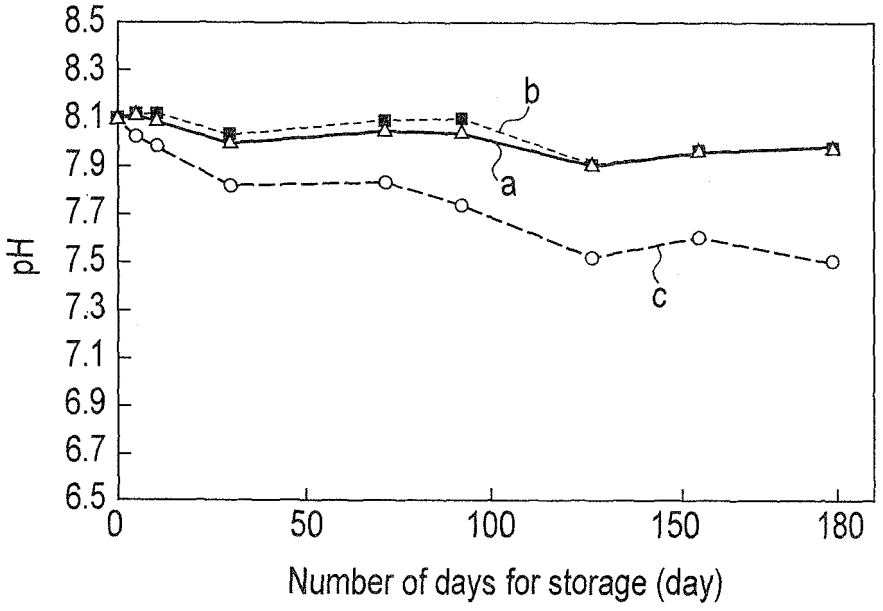


FIG. 1

EP 2 554 059 A1

Description

Technical Field

[0001] The present invention relates to an oral tobacco material, specifically to an oral tobacco material that is excellent in pH stability when it is stored at room temperature.

Background Art

[0002] Oral tobacco products such as moist-snuff or SNUS have attracted attention in recent years. These oral tobacco products comprise an oral tobacco material comprising a wet powdered tobacco, accommodated in a moisture permeable pouch, and one can enjoy the taste and flavor of the powdered tobacco by inserting the product between the lip and gum in the oral cavity.

[0003] Such wet powder tobacco itself is weakly acid in general (pH: about 4.0 to 6.0), and thus bacteria grow easily. Therefore, in order to increase storage stability by inhibiting the growth of bacteria, a pH adjusting agent is added to the powdered tobacco so as to adjust the pH thereof to a pH of approximately neutral to alkaline. Furthermore, in order to impart desirable flavor, the pH is adjusted to one desired pH within approximately neutral to alkaline regions. In addition, it is desired that the adjusted pH is substantially maintained over a whole storage period in view of maintenance of the quality of products.

[0004] Patent Document 1 discloses that an alkali metal hydroxide, a metal carbonate and a metal bicarbonate are used as a pH adjusting agent or a buffering agent. However, all of these pH adjusting agents and buffering agents are alkaline. Patent Document 1 also discloses that an inorganic filler is incorporated in a powdered tobacco, and describes calcium phosphate as an example of the inorganic filler, but calcium phosphate is alkaline.

[0005] Patent Document 2 discloses a tobacco product comprising magnesium carbonate as a pH adjusting agent for rendering the tobacco material alkaline. However, magnesium carbonate is alkaline. Furthermore, Patent Document 2 discloses that an additional pH adjusting agent may be used in addition to magnesium carbonate, and describes sodium carbonate, phosphates and the like as examples of the pH additional adjusting agent. However, this additional pH adjusting agent is used to rapidly bring the tobacco material to a desired pH value (neutral or alkaline), and thus it can be considered that the phosphates as described are alkaline.

[0006] The amount of an alkaline substance that is required to bring the wet powdered tobacco to a desired neutral or alkaline pH value is determined without variation. In addition, since the amount of the alkaline substance used to bring the powdered tobacco to a desired pH value is relatively small, the adjusted pH value cannot be maintained over a long term. Therefore, an oral tobacco material comprising a powdered tobacco whose initial pH has been adjusted by using only an alkaline substance must be stored at a low temperature (from -20°C to 10°C) rather than room temperature.

[0007] In addition, when a large amount of alkaline substance is added to an oral tobacco material so as to maintain storage stability over a long term, the pH value is increased significantly, and the mucosa may be injured when the oral tobacco material is inserted into the oral cavity. It is desirable that an oral tobacco material comprising a wet powdered tobacco to be inserted into the oral cavity has a pH of 8.5 or less.

Citation List

Patent Documents

[0008]

Patent Document 1: Jpn. PCT National Publication No. 2009-508523
Patent Document 2: International Publication No. WO2009/082331

Summary of Invention

Problem to be solved

[0009] An object of the present invention is to provide an oral tobacco material that shows excellent storage stability over a long term at room temperature.

Solution to Problem

[0010] The present invention provides an oral tobacco material comprising a powdered tobacco, and a basic salt of

carbonic acid and an acidic salt of phosphoric acid as a pH adjusting agent, wherein the basic salt of carbonic acid and the acidic salt of phosphoric acid are contained in a total amount of 6% by weight or more of a dry weight of the powdered tobacco and are incorporated such that an initial pH of the oral tobacco material becomes from 7 to 8.5, and the oral tobacco material has a water content of 15% by weight or more.

Effects of Invention

[0011] The oral tobacco material of the present invention comprises a relatively large amount of pH adjusting agent, and thus shows excellent storage stability over a long term at room temperature.

Brief Description of Drawings

[0012]

FIG. 1 is a graph showing the change in pH over time when the oral tobacco materials of Examples 1 and 2 and Comparative Example 1 mentioned below were stored in an atmosphere at a temperature of 25°C and a relative humidity of 60%;
FIG. 2 is a graph showing the change in pH over time when the oral tobacco materials of Examples 1 and 2 and Comparative Example 1 mentioned below were stored in an atmosphere at a temperature of 35°C and a relative humidity of 60%;
FIG. 3 is a graph showing the change in pH over time when the oral tobacco materials of Example 3 and Comparative Example 2 mentioned below were stored in an atmosphere at a temperature of 25°C and a relative humidity of 60%; and
FIG. 4 is a graph showing the change in pH over time when the oral tobacco materials of Example 4 and Comparative Example 3 mentioned below were stored in an atmosphere at a temperature of 25°C and a relative humidity of 60%.

Description of Embodiments

[0013] Hereinafter the various embodiments of the present invention will be explained in detail.

[0014] The oral tobacco material of the present invention comprises a powdered tobacco, and a basic salt of carbonic acid and an acidic salt of phosphoric acid as pH adjusting agent. The basic salt of carbonic acid and the acidic salt of phosphoric acid are contained in a total amount of 6% by weight of the dry weight of the powdered tobacco and are incorporated such that the initial pH of the oral tobacco material becomes from 7 to 8.5. The oral tobacco material has a water content of 15% by weight or more. The initial pH represents the pH as adjusted by the pH adjusting agent.

[0015] The powdered tobacco contained in the above-mentioned oral tobacco material includes a powder of lamina of tobacco, a mixture of powders of lamina and midrib of tobacco, a powder of reconstituted tobacco, and a mixture of a powder of reconstituted tobacco and a powder of lamina of tobacco. Examples of the varieties of tobacco may include burley tobacco, flue-cured tobacco, oriental tobacco, dark-cured tobacco and Rustica tobacco.

[0016] The pH adjusting agent contained in the oral tobacco material is composed of a combination of a basic salt of carbonic acid and an acidic salt of phosphoric acid. The basic salt of carbonic acid is preferably selected from the group consisting of sodium carbonate and potassium carbonate. A mixture of these basic salts of carbonic acid can also be used. The acidic salt of phosphoric acid is preferably selected from the group consisting of sodium dihydrogen phosphate and potassium dihydrogen phosphate. A mixture of these acidic salts of phosphoric acid can also be used.

[0017] The basic salt of carbonic acid and the acidic salt of phosphoric acid are contained such that the initial pH of the oral tobacco material becomes from 7 to 8.5, and in a total amount of 6% by weight or more of the dry weight of the powdered tobacco. When the pH value is less than 7, it is difficult to inhibit the growth of bacteria, whereas when the pH value exceeds 8.5, the mucosa in the oral cavity may be injured. Furthermore, when the total amount of the basic salt of carbonic acid and the acidic salt of phosphoric acid is less than 6% by weight, long term storability at room temperature (from 15°C to 35°C) may be deteriorated. As already mentioned, the powdered tobacco shows a pH value of from about 4.0 to 6.0. Furthermore, since the pH value of the oral tobacco material is adjusted to from 7 to 8.5 by using both an acidic substance (the acidic salt of phosphoric acid) and a basic substance (the basic salt of carbonic acid) in the present invention, even the basic substance (the basic salt of carbonic acid) is added in such a large amount that the pH of the oral tobacco material goes far beyond 8.5, the pH can be adjusted to from 7 to 8.5 by the acidic substance. Therefore, in the case where the pH of an oral tobacco material is adjusted to one desired value by using an alkaline substance alone, the amount of the alkaline substance is determined without variation, whereas in the present invention, the use amounts of the acidic substance (the acidic salt of phosphoric acid) and basic substance (basic salt of carbonic acid) can be changed significantly in adjusting the pH value of the oral tobacco material to one desired pH value. It is preferable that the acidic salt of phosphoric acid is used in an amount of 1% by weight or more of the dry

weight of the powdered tobacco. The acidic salt of phosphoric acid is generally used in an amount of 10% by weight or less of the dry weight of the powdered tobacco. The use amount of the basic salt of carbonic acid with respect to the use amount of the acidic salt of phosphoric acid is determined by the initial pH value of the oral tobacco material of from 7 to 8.5.

[0018] In the present invention, the oral tobacco material has a water content of 15% by weight or more. The pH adjusting agent used in the present invention can exert the desired effect in the oral tobacco material having a water content of 15% by weight or more. Oral tobacco materials generally have a water content of 50% by weight or less.

[0019] The oral tobacco material of the present invention may comprise additives such as flavoring agent, a wetting agent and the like.

[0020] Examples of the flavoring agent may include menthol, mint, amino acids (glycine etc.), vegetable extracts (eucalyptus, rosemary, GSE), flavonoids, Vitamin E, Vitamin C, citric acid, sodium chloride, monosaccharides such as fructose, disaccharides such as sucrose, oligosaccharides, other polysaccharides, cinnamon, horseradish (Japanese horseradish), spice-based spices such as red pepper, Japanese pepper, clove, ginger, turmeric, allspice and cardamom, herb-based spices such as basil, bay leaves, mabyora, oregano, rosemary, sage, tarragon, thyme, sesame, garlic and onion, seed-based spices such as caraway, anise leed, celery seed, coriander, cumin seed, dill seed, finnel, mace, nutmeg and poppy seed, chocolate, citrus fruits and other fruits flavors, vanillin, ethyl vanillin, bergamot oil, linalool, lemon oil and the like. The flavoring agent can be used in an amount of from 1% by weight to 5% by weight of the dry weight of the powdered tobacco.

[0021] The wetting agent may include polyhydric alcohols such as glycerin and propylene glycol, sugar alcohols such as erythritol, xylitol and sorbitol, hyaluronic acid, and the like. The wetting agent can be used in an amount of from 1% by weight to 5% by weight of the dry weight of the powdered tobacco.

[0022] In order to prepare the oral tobacco material of the present invention, at first, the water content of the powdered tobacco itself as a raw material is measured. The water content can be measured by using a commercially available heating and drying type moisture analyzer (for example, MX-50 manufactured by A&D Company, Limited). Next, the amount of water required for adjusting the water content of the oral tobacco material to 15% by weight or more is calculated. The required water amount Z can be calculated by the formula: $Z=\{X(1-a/100)+Y\}/(1-b/100)-(X+Y)$. In the formula, X is the weight of the raw material powdered tobacco, a is the water content of the raw material powdered tobacco (%), Y is the total weight of the additive substances such as the pH adjusting agent and the wetting agent, and b is the aimed water content of the oral tobacco material (%). Predetermined amounts of basic salt of carbonic acid and acidic salt of phosphoric acid, and where necessary, a water-soluble additive are added to the thus-calculated amount of water to give an aqueous solution, and the whole amount of the obtained aqueous solution can be added to the powdered tobacco of the weight X. Other additives can be incorporated into the obtained wet powdered tobacco. The oral tobacco material of the present invention is generally free from magnesium carbonate.

[0023] The oral tobacco material of the present invention is accommodated in a water-permeable pouch known per se to provide an oral tobacco product.

[0024] The oral tobacco material of the present invention can substantially maintain the initial pH that has been adjusted by the pH adjusting agent of the present invention for at least 6 months even at room temperature (from 15°C to 35°C), and thus is excellent in storage stability at room temperature.

Examples

[0025] Hereinafter the present invention will be explained by Examples, but the present invention is not construed to be limited by those Examples.

Examples 1 and 2 and Comparative Example 1

[0026] A raw material powdered tobacco was prepared by blending, as raw materials, powders of Rustica, dark-cured tobacco and tobacco mid-rib in amounts of 25% by weight, 25% by weight and 50% by weight, respectively, and the water content thereof was measured by the following technique.

[0027] The water content of 5.0 g of the raw material powdered tobacco was measured at 80°C by using a heating and drying type moisture analyzer (MX-50 manufactured by A&D Company, limited). As the result thereof, the water content was 14.0% by weight. From the water content of this raw material powdered tobacco, the amount of water required for adjusting the final water content of the oral tobacco material to approximately 25% by weight was calculated, and the calculated amount of water was prepared.

[0028] In Example 1, sodium carbonate, sodium dihydrogen phosphate and glycerin in amounts corresponding to 4.8% by weight of sodium carbonate, 1.9% by weight of sodium dihydrogen phosphate and 5.0% by weight of glycerin on the basis of the dry weight of the raw material powdered tobacco, respectively, were added to the prepared water, and the whole amount of the obtained aqueous solution was sprayed on the raw material powdered tobacco. The thus-

obtained oral tobacco material had a final water content of 25.44% by weight and had an initial pH measured by the pH measurement method mentioned below of 8.09.

[0029] In Example 2, an oral tobacco material was prepared in the same manner as in Example 1, except that sodium carbonate, sodium dihydrogen phosphate and glycerin in amounts corresponding to 8.0% by weight of sodium carbonate, 4.1% by weight of sodium dihydrogen phosphate and 5.0% by weight of glycerin on the basis of the dry weight of the powdered tobacco were added to the prepared water. The obtained oral tobacco material had a final water content of 26.39% by weight and had an initial pH measured by the pH measurement method mentioned below of 8.08.

[0030] In Comparative Example 1, an oral tobacco material was prepared in the same manner as in Example 1, except that sodium carbonate and glycerin in amounts corresponding to 2.7% by weight of sodium carbonate and 5.0% by weight of glycerin on the basis of the dry weight of the powdered tobacco were added to the prepared water. The obtained oral tobacco material had a final water content of 26.53% by weight and had an initial pH measured by the pH measurement method mentioned below of 8.11.

Examples 3 and 4 and Comparative Examples 2 and 3

[0031] A raw material powdered tobacco was prepared by blending, as raw materials, powders of Rustica, dark-cured tobacco and tobacco mid-rib in amounts of 35% by weight, 15% by weight and 50% by weight, respectively, and the water content thereof was measured by the following technique.

[0032] The water content of 5.0 g of the raw material powdered tobacco was measured at 80°C by using a heating and drying type moisture analyzer (MX-50 manufactured by A&D Company, Limited). As the result thereof, the water content was 12.7% by weight. From the water content of this raw material powdered tobacco, the amount of water required for adjusting the final water content of the oral tobacco material to approximately 15.0% by weight or 25.0% by weight was calculated, and the calculated amount of water was prepared.

[0033] In Example 3, an oral tobacco material was prepared in the same manner as in Example 1, except that sodium carbonate, sodium dihydrogen phosphate and glycerin in amounts corresponding to 5.8% by weight of sodium carbonate, 4.1% by weight of sodium dihydrogen phosphate and 5.0% by weight of glycerin on the basis of the dry weight of the raw material powdered tobacco, respectively, were added to the prepared water that was necessary for adjusting the final water content to 25.0% by weight. The thus-obtained oral tobacco material had a final water content of 26.9% by weight and had an initial pH measured by the pH measurement method mentioned below of 7.73.

[0034] In Example 4, an oral tobacco material was prepared in the same manner as in Example 1, except that sodium carbonate, sodium dihydrogen phosphate and glycerin in amounts corresponding to 5.0% by weight of sodium carbonate, 4.1% by weight of sodium dihydrogen phosphate and 5.0% by weight of glycerin on the basis of the dry weight of the powdered tobacco were added to the prepared water that was necessary for adjusting the final water content to 15.0% by weight. The obtained oral tobacco material had a final water content of 18.6% by weight and had an initial pH measured by the pH measurement method mentioned below of 7.21.

[0035] In Comparative Example 2, an oral tobacco material was prepared in the same manner as in Example 1, except that sodium carbonate and glycerin in amounts corresponding to 3.2% by weight of sodium carbonate and 5.0% by weight of glycerin on the basis of the dry weight of the powdered tobacco were added to the prepared water that was necessary for adjusting the final water content to 25.0% by weight. The obtained oral tobacco material had a final water content of 26.1% by weight and had an initial pH measured by the pH measurement method mentioned below of 7.7.

[0036] In Comparative Example 4, an oral tobacco material was prepared in the same manner as in Example 1, except that sodium carbonate and glycerin in amounts corresponding to 3.2% by weight of sodium carbonate and 5.0% by weight of glycerin on the basis of the dry weight of the powdered tobacco were added to the prepared water that was necessary for adjusting the final water content to 15.0% by weight. The obtained oral tobacco material had a final water content of 18.1% by weight and had an initial pH measured by the pH measurement method mentioned below of 7.12.

[0037] Some information about the oral tobacco materials of the Examples 1 to 4 and Comparative Examples 1 to 3 described above are listed in Table 1 below.

Table 1

Oral tobacco material	pH adjusting agent		Glycerin (% by weight)	Water content (% by weight)	Initial pH
	Sodium carbonate (% by weight)	Sodium dihydrogen phosphate (% by weight)			
Example 1	4.8	1.9	5	25.44	8.09
Example 2	8.0	4.1	5	26.39	8.08

(continued)

Oral tobacco material	pH adjusting agent		Glycerin (% by weight)	Water content (% by weight)	Initial pH
	Sodium carbonate (% by weight)	Sodium dihydrogen phosphate (% by weight)			
Example 3	5.8	4.1	5	26.9	7.73
Example 4	5.8	4.1	5	18.6	7.21
Comparative Example 1	2.7	0	5	26.53	8.11
Comparative Example 2	3.2	0	5	26.1	7.7
Comparative Example 3	3.2	0	5	18.1	7.12

[0038] The oral tobacco materials obtained in Examples 1 and 2 and Comparative Example 1 were each put into a storage pack (Lamizip AL-4 manufactured by Seisannipponsha, Ltd.; a container having moistureproof property, gas barrier property and light barrier property), and stored for 6 months in an atmosphere at a temperature of 25°C and a relative humidity of 60%, and in an atmosphere at a temperature of 35°C and a relative humidity of 60%. During the storage period, the pH was measured periodically by the pH measurement method mentioned below. The results are shown in FIGS. 1 and 2. FIG. 1 shows the result of the storage in the atmosphere at a temperature of 25°C and a relative humidity of 60%, and FIG. 2 shows the result of the storage in the atmosphere at a temperature of 35°C and a relative humidity of 60%. In FIGS. 1 and 2, the line segment a relates to Example 1, the line segment b relates to Example 2, and the line segment c relates to Comparative Example 1. As is apparent from the results shown in FIGS. 1 and 2, when the oral tobacco material of Comparative Example 1 was stored for 6 months in the atmosphere at a temperature of 25°C and a relative humidity of 60%, the pH was decreased by about 0.5, and when it was stored for 6 months in the atmosphere at a temperature of 35°C and a relative humidity of 60%, the pH was decreased by about 1.0, whereas in the oral tobacco materials of Examples 1 and 2, the pH value was decreased little in either storage condition.

[0039] The oral tobacco materials obtained in Examples 3 and 4 and Comparative Examples 2 and 3 were each put in the above-mentioned storage pack (Lamizip AL-4 manufactured by Seisannipponsha, Ltd.), and stored for 6 months in an atmosphere at a temperature of 25°C and a relative humidity of 60%. During the storage period, the pH was measured periodically by the pH measurement method mentioned below. The results are shown in FIGS. 3 and 4. In FIG. 3, the line segment d relates to Example 3 and the line segment e relates to Comparative Example 2. In FIG. 4, the line segment f relates to Example 4 and the line segment g relates to Comparative Example 3. As is apparent from the results shown in FIGS. 3 and 4, when the oral tobacco material of Comparative Example 2 was stored for 6 months in the atmosphere at a temperature of 25°C and a relative humidity of 60%, the pH was decreased by about 1.2, whereas the pH value was decreased by about 0.6 in the oral tobacco material of Example 3 during the storage under the same condition, and thus it is understood that the decrease in pH during the storage was suppressed. Furthermore, when the oral tobacco material of Comparative Example 3 was stored for 6 months in the atmosphere at a temperature of 25°C and a relative humidity of 60%, the pH was decreased by about 0.4, whereas the pH value was decreased by about 0.25 in the oral tobacco material of Example 4 during the storage under the same condition, and thus it is understood that the decrease in pH during the storage was suppressed.

<Method for measuring pH>

[0040] 2.0 g of the oral tobacco material was weighed into a vial, 20 mL of distilled water was added thereto, and the mixture was subjected to an extraction treatment by shaking at 200 rpm for 10 minutes. The extract was stood still for 5 minutes, and the pH of the extract liquid was measured by using a pH meter (IQ240 manufactured by IQ Scientific Instruments, Inc.).

Claims

1. An oral tobacco material comprising a powdered tobacco, and a basic salt of carbonic acid and an acidic salt of

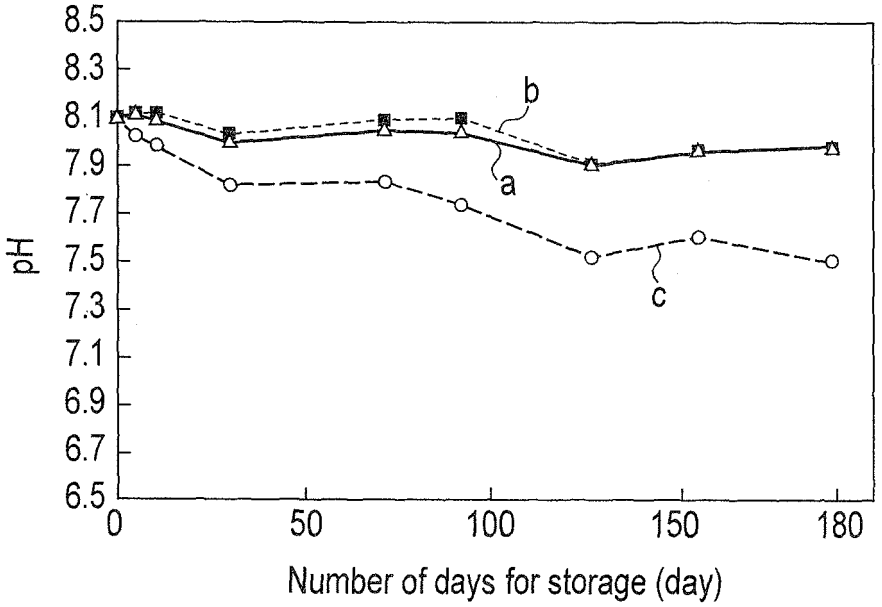
phosphoric acid as a pH adjusting agent,
wherein the basic salt of carbonic acid and the acidic salt of phosphoric acid are contained in a total amount of 6% by weight or more of a dry weight of the powdered tobacco and are incorporated such that an initial pH of the oral tobacco material becomes from 7 to 8.5, and the oral tobacco material has a water content of 15% by weight or more.

2. The oral tobacco material according to claim 1,
characterized in that the basic salt of carbonic acid is selected from the group consisting of sodium carbonate and potassium carbonate.

3. The oral tobacco material according to claim 1 or 2,
characterized in that the acidic salt of phosphoric acid is selected from the group consisting of sodium dihydrogen phosphate and potassium dihydrogen phosphate.

4. The oral tobacco material according to any one of claims 1 to 3,
wherein the oral tobacco material comprises the acidic salt of phosphoric acid in an amount of at least 1% by weight of the dry weight of the powdered tobacco.

5. The oral tobacco material according to any one of claims 1 to 4,
characterized in that the oral tobacco material is free from magnesium carbonate.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7.9
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7.3
7.1
6.9
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pH
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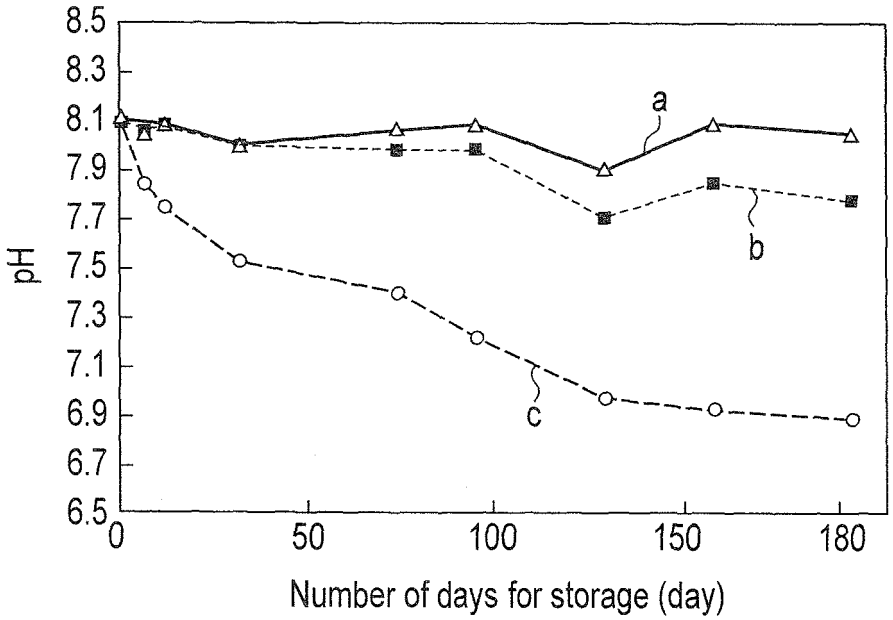
100
150
180
Number of days for storage (day)
a
b
c

FIG. 1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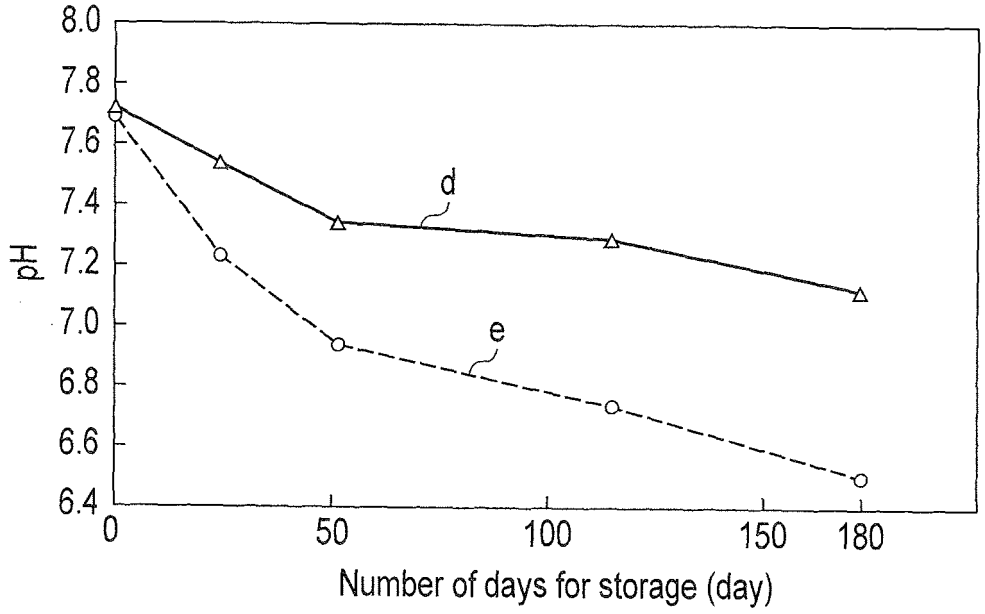
Number of days for storage (day)
a
b
c

FIG. 2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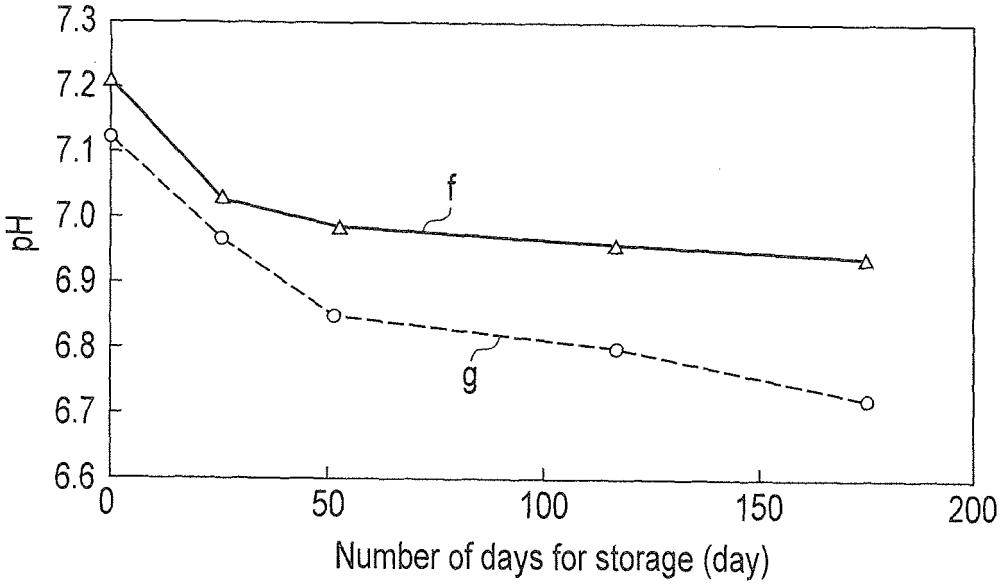
Number of days for storage (day)

FIG. 3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7.1
7.0
6.9
6.8
6.7
6.6
pH
f
g
0
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100
150
200
Number of days for storage (day)

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2011/057656

A. CLASSIFICATION OF SUBJECT MATTER
A24B13/00(2006.01)i, *A24B15/28*(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A24B13/00, A24B15/28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2011
Kokai Jitsuyo Shinan Koho	1971-2011	Toroku Jitsuyo Shinan Koho	1994-2011

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2009/048522 A1 (FUISZ, Richard), 16 April 2009 (16.04.2009), column 16, line 25 to column 17, line 15 & US 2009/0095313 A1 & EP 2205227 A1 & JP 2011-500021 A	1-5
A	WO 2009/082331 A1 (SWEDISH MATCH NORTH EUROPE AB.), 02 July 2009 (02.07.2009), column 4, lines 12 to 20 & EP 2219479 A1 & JP 2011-507510 A	1-5

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
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Date of the actual completion of the international search 12 April, 2011 (12.04.11)	Date of mailing of the international search report 19 April, 2011 (19.04.11)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2009508523 W **[0008]**
- WO 2009082331 A **[0008]**