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(54) **MANUFACTURING METHOD FOR CHEWING TOBACCO MATERIAL, AND CHEWING TOBACCO MATERIAL**

(57) A method for producing an oral tobacco material, characterized by comprising the steps of: adding an acidic substance to a starting material consisting of a dry oral

tobacco material having a pH of more than 8 to lower the pH to 8 or less; and heating the acidic substance-added tobacco material at a temperature of 80°C or higher.

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Description

Technical Field

5 **[0001]** The present invention relates to a method for producing an oral tobacco material, and an oral tobacco material.

Background Art

10 **[0002]** Recently, oral tobacco products including snus have been drawing attention. The oral tobacco product contains an oral tobacco material such as powdered tobacco in a water-permeable pouch. People insert such an oral tobacco product between a lip and a gum in a mouth, and enjoy the taste and flavor of the powdered tobacco (see, for example, Patent Document 1).

15 **[0003]** The oral tobacco material used in such an oral tobacco product contains nitrite salts. The nitrite salt is known to have a biting taste. In particular, if a large amount of the nitrite salt is contained in the oral tobacco material, it causes impairment of the tobacco flavor. For that reason, some oral tobacco product manufacturers in the Kingdom of Sweden set the upper limit of a nitrous acid amount contained in an oral tobacco material.

20 **[0004]** In order to provide an oral tobacco product whose flavor is not impaired by the nitrite salt, it is necessary to select and use an oral tobacco material having a low nitrite salt content. Under such a limitation, even if an oral tobacco material has good sensory properties as the oral tobacco material except in terms of the nitrite salt content, it is excluded for the reason that the limitation makes it unfit for use. The limitation to select and use the oral tobacco material having a low nitrite salt content, therefore, remarkably restricts oral tobacco materials capable of being used.

Prior Art Document

25 Patent Document

[0005] Patent Document 1: U.S. Patent Application Publication No. 2007/062549

Summary of Invention

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Problem to be solved by the Invention

[0006] The object of the present invention is, accordingly, to provide a method for producing an oral tobacco material having a reduced content of the nitrite salt under a small limitation.

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Means for solving the Problem

[0007] It is well known in the art that good flavor can be drawn from an oral tobacco material such as snus by addition of an alkaline component thereto. In contrast, the present inventors have found that a nitrous acid (salt) content can be remarkably decreased in the oral tobacco material by adding an acidic substance thereto, and heating the mixture at a given temperature. The present invention is based on the findings described above.

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[0008] Specifically, according to the first aspect of the present invention, there is provided a method for producing an oral tobacco material, characterized by comprising the steps of: adding an acidic substance to a starting material consisting of a dry oral tobacco material having a pH of more than 8 to lower the pH to 8 or less; and heating the acidic substance-added tobacco material at a temperature of 80°C or higher.

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[0009] Further, according to the second aspect of the present invention, there is provided an oral tobacco material which is obtained by the method for producing an oral tobacco material according to the present invention.

Effects of the Invention

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[0010] The oral tobacco material produced according to the present invention shows a significantly reduced nitrous acid content.

Description of Embodiments

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[0011] Various embodiments of the present invention will be explained in detail below.

[0012] According to the present invention, an oral tobacco material is produced by adding an acidic substance to a starting material consisting of a dry oral tobacco material having a pH of more than 8 to lower the pH to 8 or less, and

heating the acidic substance-added tobacco material at a temperature of 80°C or higher.

[0013] In the present invention, a dry oral tobacco material having a pH of more than 8 is used as a starting material. A dry oral tobacco material having a pH of more than 8 and 10 or less is usually used as the starting material. Oral tobacco materials having such a pH value are plentifully produced, and thus the above condition would not be a large limitation. The starting material may include a part of burley tobacco, dark air-cured tobacco, air-cured tobacco, and the like.

[0014] In the present specification, the pH of a dry tobacco material refers to a value obtained by adding 20 to 100 g of distilled water (corresponding to 10 times the amount of the tobacco material) to 2 to 10 g of the tobacco material; shaking the mixture of the water and the tobacco material at 200 rpm at room temperature for 10 minutes; allowing the resulting mixture to stand for 5 minutes; and then measuring the pH of an extract obtained therefrom with a pH meter (IQ 240 manufactured by IQ Scientific Instruments Inc.).

[0015] In the present invention, first, an acidic substance is added to the starting material to lower a pH of the starting material to 8 or less. Usually, the pH is lowered to 4 to 8 by addition of the acidic substance. As the acidic substance, an organic acid such as citric acid, ascorbic acid, acetic acid, lactic acid, malic acid, tartaric acid, or succinic acid may be used.

[0016] As the acidic substance, a dry oral tobacco material exhibiting acidity (i.e., a pH of less than 7) may also be used, instead of the organic acid. The dry oral tobacco material exhibiting acidity may include flue-cured tobacco, burley tobacco, dark air-cured tobacco, dark fire-cured tobacco, air-cured tobacco by early-dehydrating, sun-cured tobacco, oriental tobacco, and the like. When the dry oral tobacco material exhibiting acidity is used as the acidic substance, the amount thereof is preferably 100% by weight or less with respect to the starting material.

[0017] Next, the starting material to which the acidic substance has been added is heated at a temperature of 80°C or higher. Nitrite salts are stable in an alkaline condition having a pH of more than 8, but they become unstable when the pH is lowered to 8 or less according to the present invention, and the nitrite salt can be decomposed and released as NO_x gas by heating the starting material at 80°C or higher. The heating temperature is usually 130°C or lower. The heating time is usually from 10 minutes to 30 minutes.

[0018] In order to heat the tobacco material at a temperature of higher than 100°C, for example, the tobacco material is put in a closed heating container (such as a cylindrical one) having a jacket at the outer side thereof and equipped with an introduction pipe and an exhaust pipe of heated steam, and heated steam is directly blown into the tobacco material through the introduction pipe, while the heated steam is circulated in the jacket, whereby the tobacco material can be heated at the same temperature as that of the heated steam.

[0019] According to the present invention, the amount of nitrous acid contained in the starting material can be decreased to 90% or more.

[0020] Jpn. Pat. Appln. KOKAI Publication No. 50-111295 discloses that a tobacco composition is produced by dispersing a chemical substance such as ascorbic acid in the whole tobacco. This prior art technology, however, decreases an amount of nitrogen dioxide in tobacco mainstream smoke generated when the tobacco is burned, but cannot decrease an amount of nitrogen dioxide contained in the tobacco itself.

Examples

[0021] The present invention will be explained by means of Examples, but the invention is not limited to those Examples.

Example 1

[0022] 5 kg of dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.5) was put in a heating container, and 2% by weight of citric acid was added thereto, thereby adjusting the pH to 6.5. While the pH-adjusted tobacco material was stirred, heated steam having a temperature of 110°C was blown into the tobacco material and also the heated steam having a temperature of 110°C was circulated in a jacket provided at the outer side of the heating container, whereby the tobacco material was heated at 110°C for 30 minutes. After that, the heating container was cooled to room temperature, and the tobacco material was taken out from the container. A nitrous acid concentration in the tobacco material was measured by the following method. A nitrous acid concentration in the starting material itself was also measured. The results are shown in Table 1.

Example 2

[0023] 2.5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf) with a pH of 8.5 was blended with 2.5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf) with a pH of 6.7. The resulting blended tobacco material had a pH of 7.8. This blended tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Example 3

5 [0024] 2% by weight of ascorbic acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.1), thereby adjusting the pH to 7.8. This ascorbic acid-added tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Example 4

10 [0025] 2% by weight of acetic acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.35), thereby adjusting the pH to 6.32. This acetic acid-added tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Example 5

15 [0026] 2% by weight of lactic acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.35), thereby adjusting the pH to 7.13. This lactic acid-added tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Example 6

20 [0027] 2% by weight of malic acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.19), thereby adjusting the pH to 6.38. This malic acid-added tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Example 7

25 [0028] 2% by weight of tartaric acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.38), thereby adjusting the pH to 6.54. This tartaric acid-added tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Example 8

30 [0029] 2% by weight of succinic acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.14), thereby adjusting the pH to 6.25. This succinic acid-added tobacco material was heat-treated in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Comparative Example 1

35 [0030] A dry ground oral tobacco material (a midrib part of a burley leaf) with a pH of 8.7 was heat-treated as it is in the same manner as in Example 1, and a nitrous acid concentration thereof was measured. The results are shown in Table 1.

Comparative Example 2

45 [0031] 2% by weight of citric acid was added to 5 kg of a dry ground oral tobacco material (a midrib part of a burley leaf; a pH of 8.06), thereby adjusting the pH to 6.03. While the pH-adjusted tobacco material was stirred, heated steam having a temperature of 110°C was circulated in a jacket provided at the outer side of a heating container, whereby the tobacco material was heated at 60°C for 30 minutes. After that, the heating container was cooled to room temperature, and the tobacco material was taken out from the container. A nitrous acid concentration in the tobacco material was measured by the following method. A nitrous acid concentration in the starting material itself was also measured. The results are shown in Table 1.

<Measurement Method of Nitrous Acid Concentration>

55 [0032] Nitrous acid contained in a sample is reacted with an aromatic primary amine (sulfanilamide) to form a diazonium salt. An azo coupling reaction of the diazonium salt is caused with N-(1-naphthyl)-ehtylenediamine (NED) to form a purplish red azo compound. A concentration of nitrite nitrogen (N) in the sample is measured by measurement of an absorbance (540 nm) of the colored part, and the obtained concentration is converted into a concentration of nitrous acid.

[Table 1]

[0033]

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Table 1:

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Example No.	pH of starting material	Acidic substance	Heating temperature (°C)	pH after adjustment	Nitrous acid content (µg/g) (dry basis)	
					Before heat treatment	After heat treatment
Comparative example 1	8.7	None	110	No adjustment (8.7)	410	410
Comparative example 2	8.06	Citric acid	60	6.03	318.4	343.7
Example 1	8.5	Citric acid	110	6.5	386.4	3.8
Example 2	8.5	Tobacco material with pH of 6.7	110	7.8	306	23
Example 3	8.1	Ascorbic acid	110	7.3	346.4	3.0
Example 4	8.35	Acetic acid	110	6.32	329.1	2.0
Example 5	8.35	Lactic acid	110	7.13	329.1	20.4
Example 6	8.19	Malic acid	110	6.38	325.2	1.5
Example 7	8.38	Tartaric acid	110	6.54	339.8	1.6
Example 8	8.14	Succinic acid	110	6.25	326.3	2.2

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[0034] As is apparent from the results shown in Table 1, according to the present invention, the nitrous acid content in the starting tobacco material can be remarkably decreased. It is expected, accordingly, that smoking taste with a reduced biting taste can be enjoyed from the oral tobacco material produced according to the present invention.

Claims

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1. A method for producing an oral tobacco material, **characterized by** comprising the steps of:

adding an acidic substance to a starting material consisting of a dry oral tobacco material having a pH of more than 8 to lower the pH to 8 or less; and
heating the acidic substance-added tobacco material at a temperature of 80°C or higher.

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2. The method according to claim 1, **characterized in that** the acidic substance is an organic acid.

3. The method according to claim 1, **characterized in that** the acidic substance is a dry oral tobacco material exhibiting acidity.

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4. The method according to any one of claims 1 to 3, **characterized in that** the heating is performed at a temperature of 130°C or lower.

5. An oral tobacco material which is obtained by the method according to any one of claims 1 to 4.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2013/054196

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2009-508523 A (R.J. Reynolds Tobacco Co.), 05 March 2009 (05.03.2009), paragraphs [0005] to [0068]; fig. 1 to 5 & JP 5066092 B & JP 2010-534475 A & US 2007/0062549 A1 & US 2007/0186941 A1 & US 2008/0029110 A1 & US 2011/0061666 A1 & EP 1926401 A & EP 2173200 A & EP 2179666 A2 & EP 2377413 A1 & WO 2007/037962 A1 & WO 2009/015142 A2 & CN 101272703 A & CN 101873809 A	1-5

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REFERENCES CITED IN THE DESCRIPTION

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- US 2007062549 A [0005]
- JP 50111295 A [0020]