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PATENT SPECIFICATION

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(54) IMPROVED SMOKING MIXTURE

(71) We, IMPERIAL CHEMICAL INDUSTRIES LIMITED, of Imperial Chemical House, Millbank, London, S.W.1., a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an improved smoking mixture.

More particularly the invention relates to a method of improving the smoke flavour of a smoking mixture prepared from reconstituted tobacco. The reconstituted tobacco may be of the many types described in the reconstituted tobacco prior art.

In our co-pending U.K. Patent Application No. 13862/70, Serial 1312483, we described how the addition of protein to a substrate of tobacco substitute material improves the smoke flavour of the substitute which may be *inter alia* carbohydrate, modified carbohydrate, prepared as disclosed in our U.K. Patent No. 1,113,979, or certain aldol condensation products. The protein serves to reduce or eliminate the intensity of the off-odours and off-flavours of the smoke from the tobacco substitute material and also imparts a tobacco-like flavour and after-taste to the smoke.

We have also discovered that the addition of protein to reconstituted tobacco enhances the smoke flavour of the reconstituted tobacco. The protein produces a decrease in papery off-notes and an improvement in tobacco flavour, particularly in after-taste.

In accordance with the present invention there is provided a smoking mixture comprising reconstituted tobacco and protein, the amount of protein to tobacco being in the range 1:2 to 1:50.

Preferably the amount of protein to tobacco is in the range 1:8 to 1:26.

The protein should preferably be pure and it is desirable but not essential, that any residual fat should be removed from the protein, for example, by extraction with an organic

solvent. Especially valuable proteins include animal protein, for example albumin, casein, gelatine, peptone, haemoglobin or wool, and vegetable proteins, for example protein from maize (zein), wheat (glutin and gliadin), soy-bean or groundnut. Protein acid hydrolysates and protein enzyme hydrolysates, particularly casein acid hydrolysate and casein enzyme hydrolysate, are also suitable.

The smoking mixtures of the invention will, in addition to protein and the reconstituted tobacco, contain other ingredients such as are normally used in smoking mixtures to impart desired physical properties and burning characteristics. For example, the mixtures may comprise glow-controlling catalysts, materials to improve ash coherence and colour, nicotine, flavourants, medicaments or humectants and/or film-forming binding agents.

Alkali metal compounds may advantageously be used as glow-controlling catalysts and salts of ammonia, alkali metals or alkaline earth metals may be used as ash improvers.

Alkali or alkaline earth carbonates or porous fillers may be incorporated in the smoking mixtures to give an open texture and facilitate combustion.

More particularly, additional compounds may comprise:—

1. Fillers—e.g. calcium carbon, magnesium carbonate.

2. Humectants—e.g. glycerol, ethylene glycol, polyethylene glycol.

3. Film-forming agents—e.g. methyl cellulose, sodium carboxymethyl cellulose, pectins, gums.

4. Glow-controlling catalysts—e.g. potassium citrate, calcium carbonate, magnesium carbonate.

5. Ash cohesion agents—e.g. citric acid, sodium hydrogen phosphate, tobacco extracts.

6. Solanesol, other similar unconjugated polyisoprenoids and derivatives thereof (e.g. esters, acids and hydroxyl derivatives), may be added to obtain a sweetish aroma from the burning mixture and to give a pleasant after-note in the mouth of the smoker.

The smoking mixture may additionally con-

[Price 25p]

tain as a minor component one or more carbohydrate materials such as cellulose fibre, starch or sugar, to improve flavour and physical properties.

- 5 The invention is further illustrated by the following Examples in which all parts and percentages are by weight. In each of the Examples the flavour and after-taste of the product were assessed by a panel of smokers.
- 10 Furthermore, in each of the Examples, those ingredients which are not soluble are to be considered as being finely divided.

Example 1

- 15 1.34 parts of glycerol and 0.78 part of potassium citrate dissolved in 4 parts distilled water were mixed with 1.92 parts of sodium carboxymethyl cellulose dissolved in 96 parts hot distilled water. 6.73 parts of magnesium carbonate (magnesite), 3.86 parts of calcium carbonate, 0.2 part of the protein casein (extracted for 48 hours with petroleum ether at 30°C) and 5.18 parts of ball-milled tobacco were added to the above mixture and the whole stirred until homogeneous (about 1
- 25 hour).

- The slurry was cast on glass plates and dried to give a film 0.006 in. thick which was removed from the plates, cut and shredded. When the shred was made into cigarettes and smoked, it had a tobacco-like flavour improved particularly in after-taste compared with a similar composition without protein.
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Example 2

- 35 1.34 parts of glycerol and 0.78 part of potassium citrate dissolved in 4 parts distilled water were mixed with 1.92 parts of sodium carboxymethyl cellulose dissolved in 96 parts hot distilled water. 6.73 parts of magnesium carbonate (magnesite), 3.86 parts of calcium carbonate, 0.6 part of the protein casein (extracted for 48 hours with petroleum ether at 30°C) and 4.78 parts of ball-milled tobacco were added to the above mixture and the whole stirred until homogeneous (about 1
- 45 hour).

- The slurry was cast on glass plates and dried to give a film 0.006 in. thick which was removed from the plates, cut and shredded. When the shred was made into cigarettes and smoked, it had a tobacco-like flavour of a cigar/pipe nature when compared with a similar composition without protein.
- 50

Example 3

- 55 1.8 parts of glycerol dissolved in 4 parts of distilled water were mixed with 2.4 parts sodium carboxymethyl cellulose dissolved in 96 parts distilled water and 5.98 parts of magnesium carbonate (magnesite), 3.74 parts of calcium carbonate, 0.4 parts of petroleum ether extracted groundnut protein, 1 part bentonite and 4.98 parts of ball-milled tobacco were added to the above mixture and the
- 60

whole stirred until homogeneous (about 1 hour).

The slurry was cast on glass plates and dried to give a film 0.006 in. thick. The film was removed, shredded and made into cigarettes.

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The cigarettes on smoking had a tobacco-like flavour with a cigar/pipe nature.

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Example 4

1.8 parts of glycerol dissolved in 4 parts of distilled water were mixed with 2.4 parts sodium carboxymethyl cellulose dissolved in 96 parts distilled water. 5.98 parts of magnesium carbonate (magnesite), 3.44 parts of calcium carbonate 0.1 parts of protein casein, 1 part of bentonite and 5.28 parts of ball-milled tobacco, (ratio protein:tobacco 1:50) were added to the above mixture and the whole stirred until homogeneous (about 1

75 hour).

The slurry was cast on glass plates and dried to give a film 0.006 in. thick. The film was removed, shredded and made into cigarettes.

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The cigarettes on smoking had a tobacco-like flavour of a cigar/pipe nature.

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Example 5

1.8 parts of glycerol dissolved in 4 parts of distilled water were mixed with 2.4 parts sodium carboxymethyl cellulose dissolved in 96 parts distilled water. 5.98 parts of magnesium carbonate (magnesite), 3.44 parts of calcium carbonate, 1.78 parts of protein casein, 1.0 parts bentonite and 3.6 parts of ball-milled tobacco, (ratio protein:tobacco 1:2) were added to the above mixture and the whole stirred until homogeneous (about 1

90 hour).

The slurry was cast on glass plates and dried to give a film 0.006 in. thick. The film was removed, shredded and made into cigarettes.

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The cigarettes on smoking had a tobacco-like flavour of a cigar/pipe nature.

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Example 6

1.8 parts of glycerol dissolved in 4 parts of distilled water were mixed with 2.4 parts sodium carboxymethyl cellulose dissolved in 96 parts distilled water. 5.98 parts of magnesium carbonate (magnesite), 3.44 parts of calcium carbonate, 0.4 part of gliadin protein, 1 part bentonite and 4.98 parts of ball-milled tobacco were added to the above mixture and the whole stirred until homogeneous (about

105 1 hour).

The slurry was cast on glass plates and dried to give a film 0.006 in. thick. The film was removed, shredded and made into cigarettes.

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The cigarettes on smoking has a tobacco-like flavour of a cigar/pipe nature.

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We are aware of the Customs and Excise

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Act 1952 and we make no claim to the use of the invention in contravention of the law.

WHAT WE CLAIM IS:—

- 5 1. A smoking mixture comprising reconstituted tobacco and protein, the amount of protein to tobacco being in the range 1:2 to 1:50.
- 10 2. A smoking mixture as claimed in Claim 1 wherein the amount of protein to tobacco is in the range 1:8 to 1:26.
- 15 3. A smoking mixture as claimed in either of the preceding Claims wherein the protein is animal or vegetable protein.
- 20 4. A smoking mixture as claimed in Claim 3 wherein the animal protein comprises, albumin, casein, gelatine, peptone, haemoglobin or wool protein and the vegetable protein comprises protein from maize (zein), wheat (glutin and gliadin), soybean or groundnut.
- 25 5. A smoking mixture as claimed in Claim 1 or 2 in which the protein is present as a protein acid hydrolysate or a protein enzyme hydrolysate.
6. A smoking mixture as claimed in Claim

5 comprising casein acid hydrolysate or casein enzyme hydrolysate.

7. A smoking mixture as claimed in any one of the preceding Claims containing other ingredients such as are normally used in smoking mixtures to impart desired physical properties and burning characteristics. 30

8. A smoking mixture as claimed in Claim 7 comprising, glow-controlling catalysts, materials to improve ash coherence and colour, nicotine, flavourants, medicaments or humectants and/or film-forming binding agents. 35

9. A smoking mixture as claimed in any one of the preceding Claims comprising one or more carbohydrate materials such as cellulose fibre, starch or sugar, to improve flavour and physical properties. 40

10. A smoking mixture as claimed in any one of the preceding Claims comprising pure protein free of residual fat. 45

11. A smoking mixture substantially as hereinbefore described with reference to the Examples.

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Agent for the Applicants.

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- 10 2. A smoking mixture as claimed in Claim 1 wherein the amount of protein to tobacco is in the range 1:8 to 1:26.
- 15 3. A smoking mixture as claimed in either of the preceding Claims wherein the protein is animal or vegetable protein.
- 20 4. A smoking mixture as claimed in Claim 3 wherein the animal protein comprises, albumin, casein, gelatine, peptone, haemoglobin or wool protein and the vegetable protein comprises protein from maize (zein), wheat (glutin and gliadin), soybean or groundnut.
- 25 5. A smoking mixture as claimed in Claim 1 or 2 in which the protein is present as a protein acid hydrolysate or a protein enzyme hydrolysate.
- 5 comprising casein acid hydrolysate or casein enzyme hydrolysate.
7. A smoking mixture as claimed in any one of the preceding Claims containing other ingredients such as are normally used in smoking mixtures to impart desired physical properties and burning characteristics.
- 30 8. A smoking mixture as claimed in Claim 7 comprising, glow-controlling catalysts, materials to improve ash coherence and colour, nicotine, flavourants, medicaments or humectants and/or film-forming binding agents.
- 35 9. A smoking mixture as claimed in any one of the preceding Claims comprising one or more carbohydrate materials such as cellulose fibre, starch or sugar, to improve flavour and physical properties.
- 40 10. A smoking mixture as claimed in any one of the preceding Claims comprising pure protein free of residual fat.
- 45 11. A smoking mixture substantially as hereinbefore described with reference to the Examples.

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