

[54] **SMOKING MIXTURES**

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[58] Field of Search 131/17, 2, 144, 15

[56] **References Cited**

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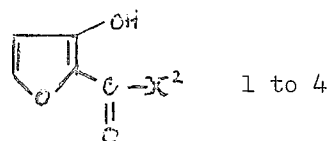
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[57] **ABSTRACT**

Tobacco substitute materials in which the main constituent is a thermally degraded carbohydrate obtained by subjecting a carbohydrate, such as cellulose to a catalysed degradation process at a temperature of at least 100° C, are treated with a flavorant compound having the general formula



where X² is an alkyl radical of one to four carbon atoms. The specific flavorants disclosed are maltol, dihydromaltol, ethylmaltol, isomaltol and 2-hydroxy-β-methyl-γ-hexenolactone.

6 Claims, No Drawings

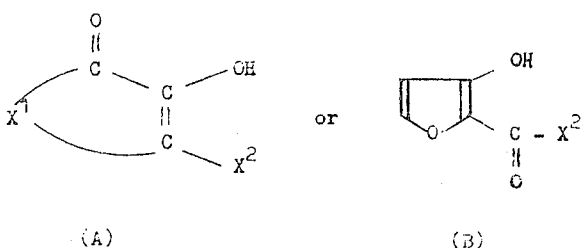
SMOKING MIXTURES

This is a division of application Ser. No. 308,743 filed Nov. 22, 1972.

This invention relates to smoking mixtures comprising solid combustible material other than tobacco, and a flavourant compound.

The opinion is now widely held that the smoking of tobacco, especially in cigarette form increases the incidence of lung cancer and bronchitic ailments. Consequently the replacement of tobacco in smoking mixtures by cellulose and other smoke-producing materials has been proposed, but such proposed mixtures have not yet proved acceptable to smokers because the smoke flavour is excessively different from that of tobacco smoke.

According to the invention a smoking mixture comprises solid combustible material other than tobacco and as a flavourant a compound of the formula

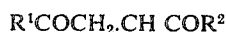


wherein X^1 represents the atoms necessary to complete a carbocyclic or heterocyclic ring of five or six carbon atoms and X^2 represents an alkyl radical preferably of one to four carbon atoms.

The solid combustible material may be a smoke-producing carbohydrate, for example α -cellulose, a cellulose ether e.g. methylcellulose, hydroxyethyl cellulose or carboxymethyl cellulose or a modified cellulose e.g. an oxidised cellulose. It may also be a sugar, starch, alginate, pectin or a natural gum.

Desirably however the solid combustible material is a thermally degraded carbohydrate, especially thermally degraded cellulose, manufactured for example by the process described and claimed in our U.K. Pat. No. 1,113,979 by subjecting carbohydrate to catalysed degradation at 100° to 250°C until the weight of degraded material is less than 90% of the dry weight of the original carbohydrate. Preferred degradation catalysts in such a process include sulphuric acid, sulphamic acid and ammonium sulphamate.

The solid combustible material may also be a condensation product manufactured as acid or base catalysed condensation of a compound of the formula



(I)

(or a precursor thereof) wherein R^1 and R^2 which may be the same or different, each represents a hydrogen atom or an alkyl, hydroxyalkyl or formyl group. Preferred such products are condensates of succinaldehyde or acetonyl acetone or a condensate from a precursor of (I) containing a furan ring structure.

The smoking mixtures may also contain other ingredients such as are normally used to impart desired physical properties and burning characteristics for ex-

ample inorganic fillers, binders, plasticisers, humectants, colorants, glow-controlling catalysts, ash improvers, nicotine, medicaments, and other flavourants besides those of the formulae (A) or (B).

In formula (A) for the flavourant compound heterocyclic rings completed by the atoms represented by X are preferably furan or pyran rings.

Specific examples of flavourant compounds of formula (A) are:

- corylone (2-hydroxy-3-methyl-2-cyclopenten-1-one)
- maltol (3-hydroxy-2-methyl-pyran-4-one)
- dihydromaltol (3-hydroxy-2-methyl(5,6H)-pyran-4-one)
- ethylmaltol (3-hydroxy-2-ethyl-pyran-4-one)
- α -hydroxy- β -methyl- γ -hexenolactone (3-hydroxy-4-methyl-5-methyl-(5-H)-furan)

A specific example of a flavourant compound of formula (B) is isomaltol (3-hydroxy-2-acetyl-furan).

To make the smoking mixtures of the invention the flavourant compound may be incorporated with the solid combustible material by any desired technique. Conveniently a solution of the flavourant compound in a volatile solvent may be sprayed on to the combustible material formulated with other ingredients into film or shred form.

Surprisingly the smoke from the smoking mixture of the invention is more tobacco-like in flavour than that from the solid combustible material alone.

The proportion of the said flavourant required to produce the tobacco-like flavour is small, generally less than 2% by weight. Thus maltol, isomaltol, dihydromaltol and ethylmaltol are preferably used at 0.7 to 1.5% by weight. Corylone however is a much stronger flavourant and is preferably used in proportions of 0.01 to 0.3% by weight.

If desired the smoking mixtures may be blended with tobacco, for example in proportions containing up to 50% of tobacco. Such blends are less hazardous to health than the tobacco, when this is smoked alone, and are preferable in flavour to the corresponding blends containing no flavourant compound.

The invention is illustrated but not limited by the following Examples in which the parts are by weight and the abbreviation SCMC means sodium carboxymethyl cellulose. All flavour assessments reported in the Examples were made by a panel of experts having long experience in assessing the flavour of tobacco cigarettes.

EXAMPLE 1

9 parts of glycerol and 2 parts of ammonium sulphate were dissolved in 400 parts of water. 12 parts of SCMC were added to the stirred solution and stirring continued for 10 minutes. To this stirred solution was added a mixture of 28.6 parts of magnesite, 16.5 parts of calcium carbonate, 5 parts of bentonite and 26.9 parts of a material prepared by heat treating α -cellulose in the presence of ammonium sulphamate until a weight loss of 25% occurred. Stirring was continued for at least one hour.

The resulting slurry was cast on glass plates to give a film with a dry basis weight of 48-52 grams per sq. metre. The film was shredded and sprayed with 0.01 parts of corylone (2-hydroxy-3-methyl-2-cyclopenten-1-one) in diethyl ether solution. The ether was evaporated off, the shred humidified and blended with its own weight of flue cured Virginian Tobacco. This blend was made into cigarettes.

Flavour assessment of these cigarettes against a similar blend without corylone showed that the former was preferred on the grounds of superior tobacco flavour.

EXAMPLE 2

Example 1 was repeated using 0.05 parts corylone.

The cigarettes containing corylone were again preferred on the grounds of flavour compared to the cigarettes without corylene added.

EXAMPLE 3

8.7 parts of glycerol and 2 parts of ammonium sulphate were dissolved in 360 parts of water. 11.6 parts of SCMC were added to the stirred solution and stirring continued for ten minutes. Thereafter a solution of 3 parts of 1-nicotine and 3 parts of lactic acid in 40 parts of water was added with stirring followed by the addition of a mixture of 26 parts of magnesite, 14.7 parts of calcium carbonate, 4.9 parts of bentonite and 26.1 parts of a material prepared by heat treating α -cellulose in the presence of ammonium sulphamate until a weight loss of 25% occurred. Stirring was continued for at least 1 hour.

The resulting slurry was cast on glass plates to give a film with a dry basis weight of 48-52 grams per sq. metre. The film was shredded and sprayed with 0.01 parts of corylone in diethyl ether solution. The ether was removed by evaporation, the shred humidified and blended with its own weight of flue-cured Virginian tobacco. This blend was made into cigarettes.

Flavour assessment of these cigarettes against a similar blend without corylone showed that the former was preferred on the grounds of superior tobacco flavour, thus showing that the flavourant effect of corylone is apparent when nicotine is also present.

EXAMPLE 4

5.32 parts of a material prepared by heat treating α -cellulose in the presence of ammonium sulphamate until a weight loss of 25% occurred was mixed with 60 parts of water and ground in a disintegrator. 1.18 parts of glycerol followed by 0.2 parts of maltol and 0.4 parts of ammonium sulphate in 20 parts of water were added to the stirred mix. A dry mixture consisting of 3.28 parts of calcium carbonate and 0.98 parts of bentonite was then added followed by 2.98 parts of sodium carboxymethyl cellulose and 5.66 parts of magnesite and

the resultant slurry stirred for at least 1 hour. The slurry was then cast to give a film with a dry basis weight of 48-52 grams per sq. metre.

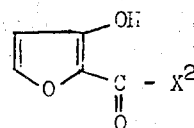
The film was shredded and the shred blended with 5 flue-cured tobacco to give a blend containing 50% of tobacco. The blend was made up into cigarettes.

Flavour assessment of these cigarettes against a similar blend without maltol showed that the former was preferred on the grounds of superior flue-cured Virginia tobacco flavour.

A similar flavour is produced by using isomaltol, dihydromaltol, ethylmaltol or 2-hydroxy- β -methyl- γ -hexenolactone in place of maltol.

What we claim is:

1. A smoking mixture comprising a thermally degraded carbohydrate tobacco substitute and, as a flavourant, a compound of the formula



wherein X^2 represents an alkyl radical preferably of one to four carbon atoms said thermally degraded carbohydrate being obtained by subjecting a carbohydrate material to a catalysed degradation process at a temperature of at least 100°C until the weight of the degraded material is approximately 90% or less of the dry weight of the original carbohydrate.

2. A smoking mixture according to claim 1 wherein the solid combustible material is a thermally degraded cellulose.

3. A smoking mixture according to claim 1 wherein the proportion of the said flavourant is less than 2% by weight.

4. A smoking mixture according to claim 1 wherein the said flavourant is maltol, dihydromaltol, ethylmaltol, isomaltol or α -hydroxy- β -methyl- γ -hexenolactone.

5. A smoking mixture according to claim 4 wherein the proportion of said flavourant is from 0.7 to 1.5 parts by weight.

6. A smoking mixture according to claim 1 blended with tobacco.

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