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TURKISH TOBACCO SUBSTITUTE FOR SMOKING TOBACCO

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This invention relates to smoking tobacco. More particularly, this invention relates to the preparation of blends of domestic tobaccos.

Most cigarettes made in the United States for domestic consumption contain blends of different tobacco types. The important types used in these blends are bright (also known as "flue-cured" or "Virginia"), burley, Maryland and Turkish (also known as "oriental" or "aromatic") tobaccos. Each type is believed to contribute specific physical or organoleptic properties to the finished product resulting in the overall aroma and flavor characteristics typical of domestic cigarettes.

Bright tobacco is believed to contribute most of the aroma of the cigarette and a large amount of the smoke flavor; bright is the major component in domestic cigarette tobacco blends and is used in amounts ranging from approximately 45 to 75 percent of the blend. Burley tobacco is added to the blend to improve the burn rate, to contribute bulk to the cigarette, and to give strength to the smoke; the levels of burley in blends are usually 15 to 45 percent. The addition of Maryland tobacco to the blend contributes filling power to the cigarette and is believed to improve generally the cigarette smoke flavor; Maryland is added in small amounts, 1–5 percent, to domestic blends. The primary contributions of Turkish tobacco are imparting aroma, mildness and a distinctive, pleasant taste to the smoke; Turkish tobacco is used in amounts ranging from about 5–15 percent in blends.

Of these major tobacco types only Turkish is grown exclusively in foreign countries. Attempts to grow consistently and economically Turkish tobacco of acceptable quality in the United States have been unsuccessful. Although prices fluctuate from year to year, Turkish tobacco is frequently more expensive than the other tobaccos used in domestic cigarette tobacco blends. Also, the filling power of Turkish tobacco, that is, the property of a given weight to pack into a relative small volume in a cigarette, contributes to the added cost of including such tobacco in blends. Thus, the substitution of Turkish tobacco in domestic blends by cheaper, domestically grown tobaccos can result in considerable economic advantage. In addition, such substitution will eliminate dependence on a source of tobacco which may not be available at all times.

An object of the present invention is to provide a means of substituting Turkish tobacco in smoking tobacco blends so that cigarettes or other smoking products made from such blends will possess the same aroma, flavor, and other desirable characteristics of blends containing Turkish tobacco and of the smoke produced therefrom.

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It is a more specific object of this invention to provide this substitution by a system in which the Turkish tobacco is replaced in the blend by a combination of either low or high grade bright tobacco to fill up the volume of the cigarette and a chemical additive to import the typical aroma, flavor and other characteristics of Turkish tobacco and its smoke.

It is a further object of this invention to provide a system of substituting Turkish tobacco in blends which is sufficiently flexible to permit its utilization in a wide range of blend compositions without loss of the desired characteristics.

In addition to the characteristics attributed to individual tobaccos in a blend, it has been found tha the blending of cigarette tobacco types produces an antagonistic or synergistic effect on the evolution of neutrals and acids of the individual tobacco types during burning. The term "neutrals" is well known in the tobacco art to refer to the substances not removed from an ether solution of steam-volatile tobacco constituents by successive extraction with aqueous sodium hydroxide and hydrochloric acid solutions. Analyses of tobacco leaf and tobacco smoke have identified more than 685 chemical compounds. Considering these aspects it is most unexpected to discover that Turkish tobacco can be omitted from a blend of cigarette tobaccos without a significant difference in smoke flavor or cigarette aroma by adding only two of the chemical compounds to a blend of domestic tobaccos.

According to the present invention the typical aroma and flavor of Turkish tobacco and its smoke is obtained in a blend of tobaccos containing no Turkish tobacco by a process comprising combining with said blend isovaleric and β-methylvaleric acids.

The system of replacing Turkish tobacco with bright tobacco and adding isovaleric and β-methylvaleric acids to a typical domestic cigarette blend produces a smoking product which is identical in organoleptic properties to a similar cigarette blend containing Turkish tobacco. A panel of smokers posesssing highly refined senses of odor and flavor perception has been unable to distinguish two cigarette blends prepared as described above in respect to mainstream smoke flavor and sidestream smoke aroma. The system is sufficiently flexible to be used with a range of blend compositions, in which the amounts (percent by weight) of the major components, bright and burley, are varied widely in a manner similar to commercial blends. In such substitutions, burley and Maryland are added in amounts identical with those used in blends with Turkish but bright is added in amounts which represent the sum of the quantity usually employed in blends with Turkish plus an additional quantity equivalent to the weight of Turkish being replaced. That portion of the bright tobacco which is added to the blend to replace the Turkish tobacco may be low grade, relatively flavorless tobacco but must not contribute undesirable taste or aroma elements which would obviate the overall aims of this invention.

The quantities of isovaleric and β-methylvaleric acids added will vary with the amount of Turkish being replaced. To replace the Turkish tobacco in blends containing relatively large amounts of such tobacco, e.g. 15–20 percent, approximately 6.5 micrograms of isovaleric and 11 micrograms of β-methylvaleric acids per gram of tobacco are added to the blend. For blends in which relatively small amounts of Turkish are replaced, e.g. 5 percent, approximately 2.6 micrograms of isovaleric

and 9.4 micrograms of β-methylvaleric acids per gram of tobacco are added to the blends. These ranges of concentration are presented to illustrate the approximate quantities needed to achieve the objectives of this invention and are not to be construed as limiting the scope of the discovery. The exact quantities may vary with the specific tobaccos used in the blend and are determined most accurately by additions of graded amounts of the acids to the blends and smoke panel testing of cigarettes made from such blends with additives.

Although this invention has been described mainly in relation to application in cigarette tobacco blends, its usefulness for replacement of Turkish tobaccos in smoking products other than typical domestic cigarette blends is apparent. Also, modifications of the method of applying the additives to cigarettes may be envisioned. Solutions of isovaleric and β-methylvaleric acids in ethanol, acetone and other organic solvents may be added to the blend or to a component of the blend, such as burley, prior to the mixing of the blend. The acids may be added to the cigarette paper, to the adhesive used to seal the cigarette or to the filter of filter-tip cigarettes. To those skilled in the art, many modifications of the system will be apparent.

The following examples illustrate the application of this invention:

Example 1

Two cigarette tobacco blends were prepared. Blend A consisted of the following composition of tobaccos of acceptable commercial standards: 40% bright, 35% burley, 5% Maryland, and 20% Turkish. Blend B consisted of the following composition: 60% bright, 35% burley, and 5% Maryland (from same lots of tobacco as Blend A). Each blend was made into cigarettes of 85 mm. in length, containing approximately 1 gram tobacco. An acetone solution of 0.065% isovaleric acid and 0.11% β-methylvaleric acid was prepared. Ten microliters of this solution equivalent to 6.5 micrograms of isovaleric acid and 11 micrograms of β-methylvaleric acid were injected into each of several cigarettes of Blend B using a 50 microliter hypodermic syringe. The syringe was provided with a 19 gauge needle having the original aperture sealed and containing 4 holes of 1/32 inch diameter distributed uniformly throughout its length to give on injection a uniform dispersion of the solution throughout the tobacco column without moving the needle during the injection. The volatile solvent was then removed from the cigarettes by passing compressed air through the cigaretes. Cigarettes of Blend A, Blend B, and Blend B with added acids, were evaluated for organoleptic differences by a panel of smokers. No distinct difference in smoke flavor or cigarette aroma was distinguished between Blend A and Blend B with the added acids. Blend B without the added acids was different in flavor and aroma than Blend A and Blend B with added acids.

Example 2

Two cigarette blends were prepared from the same lots of tobacco. Blend C consisted of the following composition of tobaccos of acceptable commercial standards: 55% bright, 35% burley, 5% Maryland, and 5% Turkish. Blend D consisted of the following composition: 60% bright, 35% burley, and 5% Maryland. Each blend was made into cigarettes of 70 mm. in length, containing approximately 1 gram tobacco. To each of several cigarettes of Blend D were added 10 microliters of an acetone solution containing .026% isovaleric and .094% β-methylvaleric acids, equivalent to 2.6 micrograms of isovaleric acid and 9.4 micrograms of β-methylvaleric acid per cigarette. The volatile solvent in the cigarette with additive was removed by passing compressed air through the tobacco. The three groups of cigarettes, Blend C, Blend D, and Blend D with added acids, were then evaluated for organoleptic differences by a panel of smokers. No distinct difference in smoke flavor or cigarette aroma was

distinguished between Blend C and Blend D with added acids. Blend D without added acids was different in flavor and aroma than Blend C and Blend with added acids.

Example 3

Two cigarette blends were prepared. Blend B consisted of the following composition of tobacco of acceptable commercial standards: 50% bright, 35% burley, 5% Maryland, and 10% Turkish. Blend F consisted of the following composition: 50% bright of acceptable commercial standards, 10% bright of low quality which was deficient in leaf aroma and smoke flavor, 35% burley of acceptable commercial standards, and 5% Maryland of acceptable commercial standards. Each blend was made into cigarettes of 70 mm. in length, containing approximately 1 gram tobacco. To each of several cigarettes of of Blend F were added 8.2 microliters of the acetone solution cited in Example 1, equivalent to 5.3 micrograms isovaleric acid and 9.0 micrograms of β-methylvaleric acid per cigarette. The volatile solvent in the cigarettes was removed by passing compressed air through the cigarettes. Cigarettes of Blend E, Blend F, and Blend F with added acids were evaluated for organoleptic differences by a panel of smokers. No distinct difference in smoke flavor or cigarette aroma was distinguished between Blend E and Blend F with added acids. Blend F without added acids was different in flavor and aroma than Blend E and Blend F with added acids.

Example 4

Two cigarette blends were prepared. Blend G consisted of the following composition of tobaccos of acceptable commercial standards: 75% bright, 15% burley, 5% Maryland, and 5% Turkish. Blend H consisted of the following composition of tobaccos of acceptable commercial standards: 80% bright, 15% burley, and 5% Maryland. Each blend was made into cigarettes of 70 mm. in length, containing approximately 1 gram tobacco. To each of several cigarettes of Blend H were added 10 microliters of the solution of acids cited in Example 2, and equivalent to 2.6 micrograms of isovaleric acid and 9.4 micrograms of β-methylvaleric acid per cigarette. The volatile solvent was removed by passing compressed air through the cigarette. The cigarettes of Blend G, Blend H, and Blend H with added acids were compared for organoleptic differences by a panel of smokers. No distinct difference in smoke flavor of cigarette aroma was distinguished between Blend G and Blend H with added acids. Blend H without added acids was different in flavor and aroma than Blend G and Blend H with added acids.

These examples illustrate the general principle of the invention and its application. It will be understood that the invention is not to be considered limiting by citation of the above examples since many modifications may be made embodying the general principle.

We claim:

1. A tobacco composition having therein and in the smoke thereof aroma and flavor characteristic of a blend containing Turkish tobacco consisting of a blend of domestic tobacco having combined therewith isovaleric acid at levels in the range of about from 2.6 to 6.5 micrograms per gram of tobacco and β-methylvaleric acid at levels in the range of about from 9.0 to 11.0 per gram of tobacco.

2. The composition of claim 1 in which the blend of domestic tobaccos consists of about from 60 to 80% by weight bright tobacco, about from 15 to 35% by weight burley tobacco, and about 5% by weight Maryland tobacco.

3. A tobacco composition having therein and in the smoke thereof aroma and flavor characteristic of a blend containing Turkish tobacco consisting of about 60% by weight bright tobacco, about 35% by weight burley tobacco, and about 5% by weight Maryland tobacco, having combined therewith about 2.6 micrograms per gram

of tobacco of isovaleric acid and about 9.4 micrograms per gram of tobacco of β-methylvaleric acid.

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