United States Patent

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[72] Inventors **Robert R. Johnson;**
Ezra Dempsey Alford, Louisville, Ky.

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[73] Assignee **Brown & Williamson Tobacco Corporation**
Louisville, Ky.
a corporation of Delaware

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[54] **TOBACCO PRODUCT INCLUDING RELEASABLE FLAVORANT**
4 Claims, No Drawing

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131/9, 131/15, 131/144, 131/261
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[50] **Field of Search** 131/144,
10, 17, 9, 261(A); 99/140; 260/313, 326(E)

[56] **References Cited**

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M. D. Coburn, and H. E. Ungnade, Synthesis and Structure of the N-Nitropyrrolidinones., Journal of Heterocyclic Chemistry. 2:308-9 (September 1965).

Primary Examiner—Samuel Koren
Assistant Examiner—G. M. Yahwak
Attorney—Kane, Dalsimer, Kane, Sullivan and Smith

ABSTRACT: An organoleptically improved tobacco product having added thereto 1-pyrrolidinecarboxaldehyde.

TOBACCO PRODUCT INCLUDING RELEASABLE FLAVORANT

BACKGROUND OF THE INVENTION

Smoking tobaccos employed in the manufacture of smoking tobacco products are generally blends of both domestic and oriental tobaccos. Tobacco manufacturers blend such tobaccos in order to provide a more aromatic tobacco product which will be pleasing to the consumer. To improve the aromatic qualities of tobacco products, many types of substances are added to the tobacco. These substances are subsequently released into the smoke when the tobacco is burned. However, many of these substances change the flavor and/or aroma of the smoking tobacco and are readily discernible by the smoker as a flavor and/or aroma not generally associated with natural tobacco or tobacco blends.

It is an object of the invention to provide a releasable flavorant which, when added to tobacco smoke filter material and/or a smoking tobacco or a tobacco blend, will enhance the flavor and/or aroma generally associated with natural tobacco or tobacco blends. It is also an object of the invention to provide an additive which is readily released from tobacco smoke filter material or tobacco when the tobacco product is smoked, whereby the harshness generally associated with tobacco smoke is reduced, while the organoleptic qualities are enhanced. A still further object of the invention is to provide smoking tobacco products, either filtered or unfiltered, such as cigarettes, cigars or pipe tobaccos, in which a releasable flavor is added thereto whereby the flavor and/or aroma of the tobacco product are enhanced.

SUMMARY OF THE INVENTION

Our invention generally contemplates providing a tobacco product having added thereto a small amount of a releasable flavorant, 1-pyrrolidinecarboxaldehyde, so that when the treated tobacco product is smoked, the releasable additive is entrained in the tobacco smoke whereby the flavor and/or aroma of the tobacco product are enhanced and the harshness generally associated with tobacco smoke is reduced.

DETAILED DESCRIPTION OF THE INVENTION

The releasable flavor additive, 1-pyrrolidinecarboxaldehyde, may be added to tobacco smoke filter material or to a smoking tobacco, which may consist of domestic tobacco, reconstituted tobacco, oriental tobacco or blends thereof, in sufficient quantities such that when the tobacco product is subsequently smoked, the additive is released into the smoke whereby the flavor and/or aroma of the tobacco product are enhanced and the harshness generally associated with tobacco smoke is substantially reduced.

The releasable flavor additive, 1-pyrrolidinecarboxaldehyde, may be easily synthesized according to known procedures such as described in the article by M. D. Coburn and H. E. Ungnade, J. Heterocyclic Chem. 2,308-9 (1965). This article reports that 1-pyrrolidinecarboxaldehyde has the following properties: b.p.$_{.3}$=69–70° C., n_D^{25}=1,4742.

Generally, the process involves slowly adding pyrrolidine to an equivalent quantity of cold formic acid under constant stirring and cooling. After all of the pyrrolidine has been added to the cold form acid, the resulting mixture is distilled at atmospheric pressure. The reaction product, 1-pyrrolidinecarboxaldehyde, is collected in the last fractions boiling above 200° C.

We have found that when a small amount of 1-pyrrolidinecarboxaldehyde is added to tobacco products which are then smoked, the smoke exhibits enhanced natural tobacco flavor and/or aroma. We have also found that where a high efficiency filter is employed with a smoking tobacco product having 1-pyrrolidinecarboxaldehyde added to the tobacco section or to the filter section, the smoke passing through the high efficiency filter has an improved natural tobacco flavor and/or aroma.

We have found that as little as 0.001 percent of 1-pyrrolidinecarboxaldehyde by weight of tobacco when added to a tobacco product enhances the natural flavor and/or aroma characteristics of a tobacco smoke product. The amount of the flavorant added may be between 0.001 percent and 0.1 percent by weight of tobacco, preferably between 0.01 percent and 0.035 percent, and more preferably 0.015 percent to 0.020 percent by weight of tobacco. It was found in smoke testing cigarettes that the cigarettes treated with 1-pyrrolidinecarboxaldehyde within the ranges stated above exhibited enhanced and well balanced tobacco smoke characteristics which are generally associated with tobacco products and that the harshness generally associated with the smoke was reduced.

The following example illustrates the use of the additive, 1-pyrrolidinecarboxaldehyde, applied to filter cigarettes. The cigarettes were smoke tested and compared against control cigarettes without the additive, 1-pyrrolidinecarboxaldehyde.

Example 1

Sufficient quantities of a solution of 1-pyrrolidinecarboxaldehyde in ethanol are sprayed on shredded and blended domestic tobacco to produce a 0.01 percent level by weight on the tobacco. After the ethanol is evaporated from the treated tobacco, cigarettes are made having a standard cellulose acetate filter.

A second quantity of shredded and blended domestic tobacco is sprayed with the same relative quantity of ethanol. After the ethanol is evaporated from the tobacco, cigarettes are made having a standard cellulose acetate filter. These cigarettes are used as the control for testing purposes.

Both the 1-pyrrolidinecarboxaldehyde treated cigarettes and the control cigarettes were smoked by an expert smoke panel. The results of the smoke panel test demonstrated a preference for the 1-pyrrolidinecarboxaldehyde treated cigarettes over the control cigarettes.

Cigarettes were made in accordance with Example 1 in which 1 -pyrrolidinecarboxaldehyde was added to the tobacco in the following levels: 0.015 percent, 0.020 percent, 0.025 percent and 0.035 percent by weight of tobacco. The results of an expert smoke panel test demonstrated a preference for the treated cigarettes over the control cigarettes. The panel indicated that the cigarettes treated with 1-pyrrolidinecarboxaldehyde provided an improved smoking tobacco product exhibiting enhanced and well balanced tobacco smoke characteristics generally associated with natural tobacco or tobacco blends and that the harshness generally associated with tobacco smoke was substantially reduced.

It should be understood that the term "tobacco products" as used herein are products made from tobacco, such as, for example, cigarettes, either filtered or unfiltered, pipe tobacco and cigars. Also, the additive, 1-pyrrolidinecarboxaldehyde, may be added to reconstituted tobacco or tobacco substitutes. It is also evident that 1-pyrrolidinecarboxaldehyde may be added not only to the tobacco or filter tip section of a tobacco product but also to the cigarette paper wrapper or seam paste employed for gluing the cigarette paper, or to the packaging material for the tobacco product. It is preferred, however, that the additive, 1-pyrrolidinecarboxaldehyde, be added to the blended and shredded tobacco prior to its formation into a tobacco product.

It is apparent that a wide variation in the amount of the additive, 1-pyrrolidinecarboxaldehyde, employed to treat a smoking tobacco may be made without departing from the invention as defined in the appended claims.

We claim:

1. A tobacco product having added thereto 1-pyrrolidinecarboxaldehyde in a sufficient amount up to about 0.1 percent by weight of the tobacco so that when the tobacco product in smoked the flavor and/or aroma generally associated with natural tobacco are enhanced.

2. A tobacco product as set forth in claim 1 wherein the amount of 1-pyrrolidinecarboxaldehyde is between about 0.001 percent and 0.1 percent by weight of the tobacco.

3. A tobacco product as set forth in claim 1 wherein the amount of 1-pyrrolidinecarboxaldehyde is between about 0.01 percent and 0.035 percent by weight of the tobacco.

4. A tobacco product as set forth in claim 1 wherein the amount of 1-pyrrolidinecarboxaldehyde is between about 0.015 percent and 0.020 percent by weight of the tobacco.