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METHOD OF MAKING A TOBACCO SUBSTITUTE

Edmundo M. Diaz, 3775 S. Hobart Blvd., Los Angeles, Calif., assignor of one-third to J. Robert Harper, and one-third to Salvador Jiron, both of Los Angeles, Calif. No Drawing. Filed Oct. 30, 1961, Ser. No. 148,745
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This invention relates to a tobacco substitute and more particularly to the method of making a tobacco substitute to be used as a pipe tobacco alone or in a blend with natural pipe tobacco, to be used as cigar leaf alone or as a blend with natural cigar tobaccos, and to be used as a cigarette tobacco alone or as a blend with natural cigarette tobaccos.

A major object of this invention is to provide a method of making a tobacco substitute that will function as an adequate complete substitute for natural tobaccos or which when blended with natural tobaccos in sufficient quantities will require use of less natural tobaccos in pipe tobacco mixtures, cigar leaf or cigarette tobaccos and will result in a corresponding reduction in the formation of tars and nicotine.

Another object of this invention is to provide a method of making a tobacco substitute that contains an agent that when properly treated will lend color thereto that will range in appearance from the light brown burley tobaccos to the darker tobacco forms.

A further object of this invention is to provide a method of making a tobacco substitute that contains an agent to promote the natural and uniform burning thereof.

A more specific object of this invention is to provide a method of making a tobacco substitute that may be deposited on a fibrous medium such as paper, or a tobacco leaf and the like, and stored or subsequently shredded or further treated for use.

Another object of this invention is to provide a method of making a tobacco substitute that can be molded in blocks or sheets which can be shredded in the same manner as natural tobacco and which will have the same general appearance of shredded natural tobacco.

A further object of this invention is to provide a tobacco substitute that when used alone or blended with natural tobaccos and formed into cigarettes, cigars or pipe tobacco will provide an aromatic and flavorful smoking cigarette, cigar or pipe.

It has been found that a tobacco substitute may be produced that closely resembles natural tobacco in appearance and taste. This tobacco substitute may be formulated from natural aromatic substances, obtained from barks, extracts of barks, beans, extracts of beans, fruits and fruit juices that are admixed with an agent to impart color to the final product, an agent to promote natural burning, and a carrier for certain of the ingredients, which will tend to impart flavor and aroma to cigarette, cigar or pipe tobacco products. A suitable solvent dissolves certain of the foregoing ingredients and provides a suspension medium for certain other ingredients. Immersion of a fibrous material into the suspension or infusion medium results in there being deposited on the fibrous material a layer of the medium. Repeated immersions increases the thickness of the layer and when it has been determined that an adequate number of immersions have been completed the coated fibrous material is subjected to artificial or natural drying processes. The coated fibrous material may be shredded or left in a leaf form.

An alternative procedure is to pour the suspension medium into molds where it will be dried into a block by natural or artificial means. Once dried the block of

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material may be shredded into particle sizes that resemble the particle sizes of shredded natural tobacco.

The shredded tobacco substitute may then be packaged and sold as pipe tobacco or it may be blended with natural pipe tobacco and sold. Also the shredded tobacco substitute may be rolled into a cigarette or blended with natural cigarette tobaccos. If the leaf form is retained it may be formed into cigars or blended with leaves of natural cigar tobaccos.

Use of the tobacco substitute in pipes, cigars or cigarettes, in blends or alone, will effect a reduction in the formation of tars and nicotine and the more extensive the use the more effective the reduction in the formation of the tars and nicotine. Additionally, use of the tobacco substitute will provide a pleasant aromatic and flavorful smoke and the more extensive the use in blends of tobaccos, the more pleasurable the aroma and the more flavorful the smoke.

The most effective solvent is one that will not impart an unpleasant residual taste and aroma to the final product and yet one that will efficiently dissolve certain of the ingredients used and provide a suspension medium for other ingredients. Although many solvents are available that fulfill the foregoing requirements, it has been determined that the preferred solvent is water.

The viscosity of the suspension medium is important, for reasons to be hereinafter detailed, and it has been determined that the viscosity can be altered by using more or less water or in the alternative using more or fewer solids admixed with the water. The quantity of water used may range between about 100 to 700 parts by weight, but the preferred quantity is 400 parts by weight.

The preferred fruit juices or fruit extracts are apple juice and tamar extract. However, entirely applicable as a suitable substitute for the apple juice and tamar extract are the following juices: orange, lemon, prune, cherry and the like, or concentrated oils of oranges and lemons. The juices used, of course, will impart to tobacco substitutes a pronounced and individual aroma and flavor. For instance, the use of orange juice will impart to the tobacco substitute a subtle orange flavor and aroma; and of course, apple juice will impart a subtle but distinctive apple flavor and aroma.

The quantity of apple juice to be used ranges between 30 and 170 parts by weight and preferably 110 parts by weight. The quantity of tamar extract to be used ranges between 8.2 to 50.6 parts by weight and preferably 23.4 parts by weight. These quantities may be combined into a single preferred quantity and ranges of quantities if some other fruit juice or combination of juices is substituted for the tamar extract. The quantity of aforementioned fruit oils to be used as a substitute for fruit juices ranges between 1 to 20 parts by weight and preferably 10 parts by weight.

If a tobacco substitute is to closely resemble a natural tobacco, it should also include an ingredient or coloring agent that will range or be made to range in color from light brown to dark brown. Such an agent should not impart to the tobacco substitute an offensive aroma and flavor and it should not mask or screen the aroma and flavor of the other ingredients. A preferred agent is sucrose which can be caramelized to a light or dark brown color. Also, sucrose will impart a sweet flavor to the tobacco substitute.

To obtain a tobacco substitute having a color that resembled natural tobacco it has been found that between about 8.2 and 40.3 parts by weight of sucrose should be used and the preferred quantity is 23.6 parts by weight.

The pleasant aroma obtained from the tobacco substitute is contributed thereto by aromatic substances such

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as powdered cinnamon, a bark, and cloves, a bud, and included in this group is vanilla extract which may also be considered a fruit extract and grouped with the fruit juices previously identified. A large number of aromatic substances are available as adequate substitutes for those mentioned. The aromatic substances will also contribute to the color of the tobacco substitute.

The quantity of powdered cinnamon to be used may range between about 4.5 to 20.6 parts by weight and the preferred quantity is 11.7 parts by weight. The quantity of powdered cloves to be used may range between 1.5 to 7.9 parts by weight and the preferred quantity is 4.2 parts by weight. The quantity of vanilla extract may range between about 2.1 to 10.3 parts by weight and the preferred quantity is 5.5 parts by weight.

The above enumerated components will not of themselves support or promote the burning or combustion of the tobacco substitute. Therefore, it is preferred that an agent be employed that will promote and sustain the burning of the tobacco substitute when it is placed in a pipe, wrapped in the shape of a cigar, or rolled into a cigarette.

The quantity of agent used is particularly important for the reason that if too much is used a "hot" smoke will be obtained. A cool smoke, whether it be pipe, cigar or cigarette, is much to be preferred, but an inadequate quantity of the combustion promoting agent will not sustain the burning of the tobacco substitute.

It has been determined that potassium nitrate is an ideal agent for promoting and sustaining the burning of the tobacco substitute and it has been found that between about 1.85 to 3.65 parts by weight is satisfactory and that 2.93 parts by weight is preferred.

The suspension medium, which is the tobacco substitute in liquid form, is deposited onto a fibrous material. To promote the deposition of the suspension onto the fiber and penetration thereof into the pores of the fiber, a carrier such as calcium carbonate has been found suitable. For all intents and purposes calcium carbonate is insoluble in water and it is this component of the synthetic tobacco substitute that is in suspension or in a colloidal suspension. It is reasonably certain that some of the other ingredients are at least partially in suspension such as those obtained from vegetable matter such as cinnamon, cloves and vanilla.

It is believed that the other ingredients or certain of the other ingredients dissolved in the solvent, deposit themselves onto the molecules of the calcium carbonate and the calcium carbonate penetrates the pores of the fibrous material and deposits itself on the surface thereof and in doing so carries the other ingredients into the pores and onto the surface. Further, it is believed that the calcium carbonate locks the other components into the pores and onto the surface of the fibrous material.

A quantity between about 10.2 to 50.5 parts by weight of calcium carbonate is used, but the preferred quantity is 28.5 parts by weight.

The fibrous material that is immersed into the suspension or infusion medium is under certain circumstances to be substantially free of taste or odor and is to be substantially entirely consumed during the burning of the tobacco. To be included within the definition of fibrous material is natural grown products such as tobacco leaves which inherently include the tobacco flavor. Also equally applicable is the fibrous material rice paper which is a relatively pure cellulose product free of taste.

The method for preparing the tobacco substitute is as follows: The first step is to caramelize the sucrose in a dry vessel until the desired color is obtained, which may be light brown, dark brown or some shade of brown between light and dark.

Step two of the method requires heating the solvent at a temperature between 60°-100° C. and preferably at 80° C. The sucrose, burning agent, carrier, cinnamon and cloves are added to the heated water and vigorously

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stirred until as much of the ingredients are in solution as will go into solution. Since the carrier is calcium carbonate and will not go into solution, a suspension is obtained; also, cloves and cinnamon are obtained from vegetable matter and it is very likely that at least a portion of these ingredients will not go into solution and are in suspension.

Step three is directed to cooling the suspension to a temperature between 20 and 30° C., and preferably 25° C., which normally can be considered room temperature. The tamar extract, vanilla extract and apple juice are added to the cooled suspension.

The fibrous material whether it be rice paper or a tobacco leaf is then immersed into the suspension and allowed to remain between about 30 and 90 seconds and preferably 60 seconds, which is step four of the process. Between 1 to 10 immersions are required to properly coat the fibrous material to provide a satisfactory leaf.

There is an alternative step four which eliminates the use of the fibrous material. The suspension of step three may be poured into molds and allowed to harden. If this alternative step four is followed, then the carrier, calcium carbonate may be dispensed with for the reason that a deposit is not made on a fibrous material.

Step five of the process is applicable to either step four. The product of step four is dried naturally or artificially. If artificial drying is used, it is done at a temperature in an air bath between about 38-66° C., and preferably at 52° C.

The product obtained from step five is a tobacco substitute that is in the form of a block or leaf. In either form the product can be particulated to be used as pipe or cigarette tobacco or blended with natural pipe or cigarette tobaccos as previously mentioned. In the case of the leaf, it may be formed into a cigar or blended with natural cigar tobacco.

The viscosity of the suspension may be varied in one of two ways to provide an infinite variety of viscosities. Using a minimum amount of solvents with the maximum amount of the other ingredients will give a relatively viscous suspension; or using the maximum amount of solvent and a minimum amount of the other ingredients will give a suspension that is relatively thin or less viscous. Of course, variations between the two extremes will result in giving a suspension that is less viscous than the first extreme cited and more viscous than the last cited extreme.

It has been found that if the suspension is relatively viscous that fewer immersions of the fibrous material is required to provide an adequate deposit thereon. Further, it has been found that the color of the final product can be, in part, controlled by the number of times the fibrous material is immersed into the suspension.

The following examples serve to illustrate the versatility of the invention and show that a tobacco substitute can be prepared that has a variety of properties. The five-step method of preparing the synthetic tobacco applies to all the examples.

Example I

	Parts by weight
Suspension medium:	
Water	400
Apple juice	110
Sucrose	23.6
Potassium nitrate	2.93
Calcium carbonate	28.5
Cinnamon	11.7
Cloves	4.2
Tamar extract	23.4
Vanilla extract	5.5

The preceding example contains the preferred components of the tobacco substitute in the preferred quantities. The potassium nitrate promotes the combustion of the tobacco substitute and provides a smoke that is not

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too hot and yet a uniform continuous burning is provided. A subtle pleasing flavor and aroma of apple is provided and the aromatic substances contribute to a pleasing, but not overpowering, aroma.

Additionally, the viscosity of the suspension is such that the deposition of the suspension on the fibrous material can be relatively accurately controlled to produce satisfactory results.

Example II

Suspension medium:	Parts by weight
Water	100
Apple juice	170
Sucrose	40.3
Potassium nitrate	3.65
Calcium carbonate	50.5
Cinnamon	20.6
Cloves	7.9
Tamar extract	50.6
Vanilla extract	10.3

This example serves to illustrate one of the previously mentioned extremes where the quantity of solvent used is minimum and the quantity of the other ingredients used is maximum. The viscosity of the suspension will be greater, the promotion of burning will be more pronounced and the flavor and odor will also be more pronounced. Use of this suspension will have a direct bearing on the number of times it will be necessary to immerse the fibrous material into the suspension. Since the suspension does have a greater viscosity, the number of immersions may be reduced if desired.

Example III

Suspension medium:	Parts by Weight
Water	700
Apple juice	30
Sucrose	8.2
Potassium nitrate	1.85
Calcium carbonate	10.2
Cinnamon	4.5
Cloves	1.5
Tamar extract	8.2
Vanilla extract	2.1

This example serves to illustrate just the opposite of that shown in Example II. A less viscous suspension is provided; more immersions of the fibrous material into the suspension may be required, the aromaticity and flavor of the tobacco substitute may be less pronounced, and more subtle.

Example IV

Suspension medium:	Parts by Weight
Water	400
Orange juice	110
Sucrose	23.6
Potassium nitrate	2.93
Calcium carbonate	28.5
Cinnamon	11.7
Cloves	4.2
Tamar extract	23.4
Vanilla extract	5.5

It is to be noted that orange juice has been substituted for apple juice and the quantities used are the same as those used in Example I. The orange juice will provide the tobacco substitute with an orange flavor and an aroma of oranges. It is to be understood that this Example IV may be varied in the same manner as Examples II and III to provide substantially the same results except that the predominating characteristic will be the aroma and flavor of oranges instead of apples. An acceptable substitute for the orange juice in Example IV is 10 parts by weight of oil of orange.

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Example V

Suspension medium:	Parts by Weight
Water	400
Apple juice	110
Sucrose	23.6
Potassium nitrate	2.93
Cinnamon	11.7
Cloves	4.2
Tamar extract	23.4
Vanilla extract	5.5

The carrier, calcium carbonate, is absent and therefore this example serves to illustrate that the formulation is to be poured in molds and subsequently particulated and used as pipe or cigarette tobacco.

While the invention has been shown and described herein in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is therefore not to be limited to the details disclosed herein but is to be accorded the full scope of the claims and so as to embrace any and all equivalent methods.

What is claimed is:

1. A method of producing a tobacco substitute comprising caramelizing sucrose; admixing said caramelized sucrose with a heated solvent together with potassium nitrate, calcium carbonate, and aromatic and flavorful substances, to produce a suspension; reducing the temperature of said suspension and admixing therewith flavor and aroma producing extracts and juices; immersing a fibrous material into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated fibrous material to a drying process.

2. A method of producing a tobacco substitute comprising caramelizing sucrose; admixing said caramelized sucrose with water, heated to between about 60-100° C., together with potassium nitrate, calcium carbonate, and aromatic and flavorful substances to produce a suspension; reducing the temperature of said suspension to between about 20-30° C., and admixing therewith flavor and aroma producing extracts and juices; immersing a fibrous material into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated fibrous material to a drying process.

3. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.7 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60-100° C., together with potassium nitrate, calcium carbonate, flavor and aroma producing substances to produce a suspension; reducing the temperature of said suspension to between about 20-30° C., and admixing therewith flavor and aroma producing extracts and juices; immersing a fibrous material into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated fibrous material to a drying process.

4. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.3 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60-100° C., together with calcium carbonate, flavor and aroma producing substances and between about 1.85 to 3.65 parts by weight potassium nitrate, to produce a suspension; reducing the temperature of said suspension to between about 20-30° C., and admixing therewith flavor and aroma producing extracts and juices; immersing a fibrous material into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated fibrous material to a drying process.

5. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.3 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60-100° C., together with flavor and aroma producing substances and between about

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1.85 to 8.65 parts by weight potassium nitrate, between about 10.2 to 50.5 parts by weight calcium carbonate, to produce a suspension; reducing the temperature of said suspension to between about 20–30° C., and admixing therewith flavor and aroma producing extracts and juices; immersing a fibrous material into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated fibrous material to a drying process.

6. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.3 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60–100° C., together with flavor and aroma producing substances and between about 1.85 to 3.65 parts by weight potassium nitrate, between about 10.2 to 50.5 parts by weight calcium carbonate to produce a suspension; reducing the temperature of said suspension to between about 20–30° C., and admixing therewith flavor and aroma producing extracts and juices; immersing rice paper into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated rice paper to a drying process.

7. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.3 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60–100° C., together with flavor and aroma producing substances and between about 1.85 to 3.65 parts by weight potassium nitrate, between about 10.2 to 50.5 parts by weight calcium carbonate, to produce a suspension; reducing the temperature of said suspension to between about 20–30° C., and admixing therewith flavor and aroma producing extracts and juices; immersing a tobacco leaf into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated tobacco leaf to a drying process.

8. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.3 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60–100° C., together with between about 1.85 to 3.65 parts by weight potassium nitrate, between about 10.2 to 50.5 parts by weight calcium carbonate, between about 6.0 to 28.5 parts by weight of flavor and aroma producing substances to produce a suspension; reducing the temperature of said suspension to between about 20–30° C., and admixing therewith flavor and aroma producing extracts and juices; im-

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mersing rice paper into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated rice paper to a drying process.

9. A method of producing a tobacco substitute comprising caramelizing between about 8.2 to 40.3 parts by weight sucrose; admixing said caramelized sucrose with water, heated to between about 60–100° C., together with flavor and aroma producing substances and between about 1.85 to 3.65 parts by weight potassium nitrate, between about 10.2 to 50.5 parts by weight calcium carbonate to produce a suspension; reducing the temperature of said suspension to between about 20–30° C., and admixing therewith between about 40.3 to 230.9 parts by weight flavor and aroma producing extracts and juices; immersing rice paper into said suspension until a desired deposit of said suspension is obtained thereon; and submitting said treated rice paper to a drying process.

10. A method of producing a tobacco substitute comprising caramelizing 23.6 parts by weight sucrose; admixing said caramelized sucrose with 400 parts by weight water, heated to 80° C., together with 2.93 parts by weight potassium nitrate, 28.5 parts by weight calcium carbonate, 15.9 parts by weight flavor and aroma producing substances to produce a suspension; reducing the temperature of said suspension to 25° C., and admixing therewith 138.9 parts by weight flavor and aroma producing extracts and juices; immersing rice paper into said suspension between about 1 to 10 times to obtain a desired deposit of said suspension on said rice paper; and submitting said treated rice paper to a drying process.

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