

Description**TECHNICAL FIELD**

5 The present invention relates to a fruit juice mix for whipped and/or frozen applications which is essentially free from non-vegetable ingredients. More specifically, the present invention relates to a fruit juice mix for whipped and/or frozen applications having a brix value of from about 10 to about 35 and generally 20 to 30 and containing various combinations of juices and stabilizers therein and preferably containing on a dry weight basis about 25 to 45 percent fructose, about 10 to 30 percent glucose, and no
 10 more than about 10 percent of other sweeteners of the saccharide class, i.e. essentially free of refined sugars and corn sweeteners. Particularly, this invention relates to more storage-stable fruit juice mixes and the gaseous products thereof wherein at least one of the juices may have been subjected to treatment with an ion exchange resin or ultrafiltration to give a more stable juice mixture.

15 BACKGROUND ART

Fruit juices including mixtures are available on the market in various forms such as unsweetened and sweetened, frozen and unfrozen, including concentrated and fully diluted. These fruit juices, in the frozen state, are characterized generally as exhibiting a crystalline structure in many cases that breaks into layers
 20 or lamina which frequently exhibits a needle-like structure with the crystals being most noticeable. Thus, these commercial frozen juices can, with their needle-like crystal structure, cause injury to the mouth. On the other hand, the frozen juices sold with a stick frozen therein are described as being quiescent in nature but exhibit the harsh feel in the mouth of crystalline ice or needles as contrasted with the soothing feel of the instant whipped or frozen product. The prior art teaches of how to avoid or reduce the above disadvantages and have generally added solids for the purpose of aiding the sweetening and freezing of the
 25 juices where these solids or additives are other than fruit juice origin and contains refined sugar, corn sweeteners, and the like, including artificial colors and flavors.

After World War II there was an upsurge in popularity of soft frozen ice cream and drinks, which led to a desire to produce a soft frozen all-natural fruit juice. This desire has not been adequately attained
 30 because those who practiced the prior art found natural fruit juice would not produce a product acceptable to the consumer. When a person eats a frozen product, the taste buds are partially anesthetized and the juice concentrate has to be diluted to about single strength and then, to attain desired sweetness, high potency sweeteners or dextrose, sucrose, fructose, lactose and similar sugars are used which in turn deleteriously affects the brix of the concentrate.

35 The present invention relates to a fruit juice mix which, in the whipped and/or frozen state, exhibits the absence from the mass of a unitary or essentially a unitary crystalline lattice network having shear planes less than about 0.1 up to about 0.5 centimeter in length. More particularly, the present invention relates to a fruit juice mix capable of being whipped and/or frozen having a brix value of from about 10 to about 35 with various combinations of juice or juices, natural flavoring and stabilizers to give a whipped and/or frozen
 40 mass having a soothing, satisfying feel and taste in the mouth.

A specific embodiment of this invention relates to use of ion exchange treated and/or ultrafiltrated juice or juices to give mixtures having improved storage stability at ambient to freezing temperatures and permitting products such as drinks and frozen creams to be made from a storage stable mix where the mix may have a flavor characteristic of the red, orange and yellow juices that are more difficult to store without
 45 losing their fresh taste.

DISCLOSURE OF INVENTION

It is therefore an aspect of the present invention to provide a fruit juice mix for whipped and/or frozen
 50 applications containing essentially natural components.

It is a further aspect of the present invention to provide a fruit juice mix for whipped and/or frozen applications, as above, wherein said fruit juice can be frozen and is edible as such and is characterized in that the frozen mix is very short crystalline and non-lattice structured, viz., does not exhibit cleavage planes through several centimeters of thickness as exhibited by the commercial frozen fruit juice sold under the
 55 Popsicle trademark.

It is another aspect of the present invention to provide a fruit juice mix for whipped and/or frozen applications containing natural components, as above, wherein said mix has a sweetness value of from about 20 brix to about 35 brix and generally 20 to 30 and preferably, on a dry basis, a fructose content of

25 to 45 percent, a glucose content of 10 to 30 percent, and no more than about 10 percent of other sweeteners of the saccharide class and has a freezing range of preferably from about -4.5° C to -26.7° C with the most preferred range being -12° C to -6.6° C.

It is yet a further aspect of the present invention to provide a fruit juice mix for whipped and/or frozen applications, as above, containing stabilizers therein, for example guar gum, locust bean gum, carrageenan, and the like.

It is a further aspect of the present invention to provide a fruit juice mix for whipped and/or frozen applications, as above, containing vegetable proteins such as soy protein concentrate, or enzyme modified soy protein concentrate, which is used to improve and control the whipability, creaminess and texture of the finished product.

It is a still further aspect of the present invention to provide a fruit juice mix for whipped and/or frozen applications, as above, wherein various spices, natural flavors, and tartness additives can be utilized.

It is a further aspect of the present invention to provide a fruit juice mix for whipped and/or frozen applications, as above, wherein water is used to regulate the brix level and adjust solids to proper freezing and sweetness levels to permit them to be consumed without further dilution.

A special embodiment hereof having the aspect of providing novel drinks and creams either whipped, frozen, thickened or cultured with the flavor and appearance of a juice having the colors such as the red, orange or yellow juices of strawberries, oranges or peaches.

These and other aspects of the present invention will become apparent from the following detailed description of the invention in view of the Background Art.

In general, a fruit juice mixture, comprises: at least one type of fruit juice; from about 0.05 percent to about 1.5 percent by weight of at least one stabilizer based upon the total weight of said mixture, said stabilizer being derived from a natural source; from about .05 percent to about .15 percent by weight of a vegetable protein based upon the total weight of said mixture; an amount of remaining ingredients including water such that said mixture has an overall brix value of from about 10 to about 35, and said blend being free of sugar and corn sweetener additives.

BEST MODE FOR CARRYING OUT THE INVENTION

A fruit juice mixture essentially contains all natural ingredients. By natural ingredients it is meant that it is obtained from a fruit, vegetable or related edible plant by crushing, squeezing and related operations, then filtered, strained, passed through a sieve, resin beds, clay or diatomaceous earth bed or filters, ion exchanged resins to give a juice, a juice concentrate, purees, and concentrates or so-called modified juices. The fruit juice mixture generally may be frozen and edible as such, that is either as a soft serve, hard frozen, or novelty form such as frozen on a stick. The mixture contains at least one type of fruit juice although a combination of various juices as well as types thereof can be utilized. By the term fruit juice it is meant any type of juice which is extracted from fruit by any conventional means such as pressing. That is, the juice itself contains types of saccharides preferably a majority of monosaccharides which naturally occurs in that type of juice, as extracted from plants by any one of the well known methods. Specific types of juices which can be utilized in the present invention include fruit juice, concentrated fruit juice, fruit puree, fruit puree concentrated, juices which have been modified, that is modified juice, as well as modified concentrated juice and the like. Modified juices would include ion exchange treated and/or ultrafiltrated juices. Examples of a few of the many specific juices which can be utilized in the present invention include peach concentrate, pear concentrate, blackberry puree, cranberry juice, orange juice concentrate, grape concentrate, and apple juice concentrate. Of course, many other types of juices whether in the form of a puree, concentrate, or a juice can be utilized depending upon the desired end flavor.

The type of juice source, such as fruit juice, fruit juice concentrate, fruit puree, fruit puree concentrate, fruit juice concentrated puree, modified juice as well as their concentrates has a sweetness due to the natural saccharide content contained therein. The degree of sweetness is generally listed by a brix value. Brix is generally defined as the percent of soluble solids primarily made up of natural sugars. The fruit juice mixture, or frozen soft serve material of the present invention, generally has an overall brix value of from about 20 to 35, once the other ingredients, such as water, stabilizers, natural flavors and the like, as noted hereinbelow, have been added to the juices. In other words, a sufficient amount of water and the like is added to dilute the concentrated juice from the source such that it has a brix value of from about 20 to 35. A blend having a brix value of 35 or greater generally tends to be too sweet and is difficult to freeze. A more desirable brix range is from about 20 to about 27 with 23 to 26 being preferred. The brix value of approximately 25 is optimum for most juices. These brix values are obtained without the use of lactose or refined sugar or corn sweeteners, as is the practice in making ice cream.

Stabilizers are used in the present invention to give body as well as good texture and improve stability of overrun and melt down to the overall mixture. The stabilizers are derived from natural sources such as plants and the like, although some of the stabilizers may have been modified in order to render them stable and food-grade functional or clean. In other words, the stabilizers as a whole are not artificial or synthetically made. Examples of stabilizers which are utilized and generally preferred in the present invention include guar gum, locust bean gum, and carrageenan. In addition to these basic types of stabilizers, other types can be utilized such as various alginates which are generally made from seaweed, various cellulose gums, xanthan gum, various pectins, and the like. Such stabilizers are well known to those skilled in the art as well as the literature. The stabilizers render the juice mix uniform and also tend to control the size and the consistency of the mix when frozen. That is, a creamy consistency is generally obtained.

The total amount of all stabilizers utilized is generally from about .05 percent to about 1.5 percent by weight based upon the weight of the entire juice mix. Lesser amounts tend to result in separation of the various ingredients whereas higher amounts tend to result in a very viscous mixture which is difficult to mix. A more desirable range is from about 0.2 to about 1.0 percent by weight with approximately 0.35 to about 0.60 being preferred. Generally, the amount of each individual stabilizer utilized is approximately the same. Thus, if the amount of an individual stabilizer utilized is reduced, it is usually compensated by the use of a similar increased amount of another stabilizer so that the overall amount generally remains the same. Typically, the total amount of guar gum utilized is approximately 5 gms./3.8l (gal.) to about 10 gms./3.8l (gal.) with from about .14 percent to about .18 percent of this gum being preferred. The amount of locust bean gum utilized as well as the carrageenan is from about .17 to about .29 percent with from about 0.10 percent to about 0.14 percent of this gum being preferred. The remaining stabilizer, such as the alginate, the cellulose gum as well as the pectin are used in similar amounts as above.

Another ingredient which is utilized is vegetable protein such as soy protein. Generally, any modified type of soy protein can be utilized. The purpose of the soy protein is to improve and control the whipability of the fruit juice mix for whipped and/or frozen applications to make it creamier. It thus enhances the overrun upon whipping of the frozen material to take up air such that a creamier, ice cream like or whipped cream type consistency is achieved. The amount of soy protein is generally from about 0.05 percent to about 0.5 percent, with from about 3 to about 13 grams per 3.8l (1 gallon) of formulation being utilized. Approximately 4 to 6 or 7 grams is highly preferred.

As noted above, the overall fruit juice mix which is generally whipped and/or frozen and served as such contains a particular fruit juice and/or natural flavor to impart a particular flavor to the overall mixture. Also, this particular fruit juice can affect the freezing point. The various stabilizers are utilized to give a creamy consistency as well as to stabilize the syrup. The soy protein, as noted above, enhances the whipping ability to yield a soft serve frozen mixture. The amount of water will vary over a wide range, depending on the concentration of the juice mixtures to bring the product to the desired brix range.

Other ingredients which may be utilized are natural flavors and/or spices to establish standardized optimum flavor levels for said flavor. Examples of flavor enhancers include nutmeg and cinnamon in small amounts such as from about 0.05 percent to about 0.07 percent by weight, and natural flavors derived from concentrates of essential oils or botanicals essences. Naturally, other specialty type ingredients can also be utilized in similar amounts. Any natural flavoring ingredient can be used to make flavors, ranging from tropical fruits, pumpkin, to pizza, if desired.

Generally, small amounts of various flavor modifiers, generally acids, can be utilized to impart tartness, enhance flavor, prevent oxidation of the ingredients or the like. For example, citric acid and other organic acids such as malic acid may be utilized to impart tartness or accentuate the flavor of the mixture. The amounts of such acids generally range from about 0.15 to .8 percent by weight apart from the levels of total acids from juice sources, etc. The titratable acidity of the mix would generally range from .15 to .8 percent. In order to prevent oxidation of the ingredients, commonly called browning, ascorbic acid can be utilized as in an amount from about .02 to about 0.10 weight percent, and preferably from about .05 percent to about 0.08 percent by weight based upon the total weight of the overall fruit juice mixture.

The mixing procedure for forming the fruit juice mix is generally as follows:

The primary fruit juice or concentrate thereof, such as pear juice concentrate, is added to a makeup tank. Next, all of the remaining fruit juices or concentrates, viz., modified or puree, are added. Then all the remaining liquid ingredients, including purees, flavors, and the like are added and mixed for approximately 5 minutes or more depending on size of mixture and efficiency of the mixing equipment. Approximately 75 percent by weight of the water is added holding out a sufficient amount of water to be utilized in mixing with the stabilizers. One-half of the withheld water is usually at about 10° C to about 37° C and the stabilizer is slowly added thereto, generally maintaining a good vortex in the stabilizer mixing tank. After the stabilizer has been thoroughly dispersed and no lumps are contained therein, usually about 10 minutes, the water

dispersion of the stabilizer is slowly added to the water diluted mix and thoroughly incorporated therein. The balance of the water is used to wash out the stabilizer mixing tank and to ensure all the stabilizer is transferred to the diluted juice tank. The last water addition is stirred to give a uniform mix. This mix may be refrigerated to await containerization in suitable shipping packaging. Before packaging, the mix is raised to commercial sterilization temperature, about 83.9° C to about 96° C for about 2 minutes to about 8 seconds at high temperature and then cooled and aseptically packaged to await use or shipment to the use point. Alternatively, the product at about 83.9° C to 96° C is added to the container and the closed container is then cooled to the storage temperature in what is generally called the hot pack system to await use or shipment to the use point.

At the consumption point, the juice is poured into a machine known to the ice cream trade as an ice cream type making machine or frost stirrer mixer. Here it is cooled and frozen as well as whipped to produce a frozen flavourable mixture of either soft serve or hard frozen mixture, depending on the temperature and the time in the machine and the equipment being used. Those of ordinary skill in the ice cream trade will immediately see other apparatus that could be used to process the juice mixes of this invention, including the whipped creams and soft and hard frozen creams.

Sufficient air can be whipped into the fruit juice mixture to give a smooth texture at a temperature of minus 40° C to 10° C on an expansion of volume of the fruit juice mixture of 20 to 200 percent by volume.

The invention will be better understood by reference to the following representative and illustrative examples where all parts and percentages are by weight unless otherwise designated.

Example 1

A grape flavored mixture was made utilizing the above described mixing procedure having the following formulation:

GRAPE SOFT SERVE

		Formula	
Ingredients		9/3.8 liter (1 Gallon)	
Pear Concentrate	71° Brix	946.17	
Grape Concentrate	52° Brix	660.60	
Stabilizer		17.00	
Guar gum, locust bean gum, carrageenan			
Water		2539.09	
Soy Protein		5.00	
Malic Acid		6.20	
		4174.06	
Brix	25.0	+	1.0
pH	3.8	+	0.1
Titratable acid	.45	+	.02

The recipe may be mixed, frozen and processed in any machine designed to freeze ice cream or yogurt to give a frozen aeriated mix having a very good, soft consistency and a delicious flavor.

Example 2

An apple flavored fruit juice mixture was prepared in accordance with the above mixing procedure

having the following formula:

APPLE SOFT SERVE

5	Ingredients	Formula 9/3,8 liter (1 Gallon)
	Apple Juice Concentrate 72° Brix	1415.08
10	Stabilizer Guar gum, locust bean gum, carrageenan	17.0
15	Cinnamon (optional)	2.15
	Nutmeg (optional)	0.5
20	Water	2734.27
	Soy Protein	5.0
		4173.55
25	Brix 25.0 + 1.0 pH 3.95 + 0.10 Titratable acid 0.60 + 0.02	

30

Generally, the various flavors have a good consistency, are soft as of the nature of frozen yogurt or ice cream, and have an overall good natural cinnamon flavored taste.

As is apparent from the above examples, it should be appreciated that numerous other formulations and flavors can be made within the scope of the present invention utilizing all natural ingredients, including
35 juices, purees, modified juices and the like, natural stabilizers, soy protein, natural flavor, water and the like.

When using the so-called modified juices such as juices that have been passed through an ion exchange resin to contact the juice with the resin which removes color bodies, readily oxidized or unstable bodies and the weak fruit acids, it is desired to use the mixing procedure of Example 3. As is well known, absorbants such as charcoal or special carbons as well as the absorbent resins such as the well known
40 anion and cation resins and porous membranes or packing of ultrafiltration methods are used to purify juice products. In the instant invention, optimization of the acid-sweetness ratio and removal of color and flavor are achieved by this same technique. We have discovered that juices which have been subjected to an absorbent treatment of about 10°C to about 60°C and filtering away of the absorbent or permitting the juice to flow away from the resin or porous membrane or packing offers unique opportunities for making
45 products having unique properties such as storage stability at temperatures above the freezing temperature of the juice mixture. Also, the modified juices are excellent for enhancing or fortifying the mixture. Specifically, a relatively long life strawberry, peach or orange drink is possible where the drink can be held at room temperature in a manner simulating the practice with aseptic packed apple and/or pear juice or white or purple grape juice.

50

Example 3

In batch mixing equipment of appropriate size, 1050 parts of water was metered into the make-up tank. A juice and flavor concentrate (about 2800 parts) was charged to the make-up tank with the mixer running
55 to form a juice mix. The juice and flavor concentrate comprised about equal parts of deionized apple and/or pear juice of 71° brix and peach puree of 9.5° brix with about 70 parts of natural peach flavor.

In a small mixing kettle 400 parts of water was added before the dry ingredients slowly were added and mixed therein to give a stabilizer solution. The dry ingredients used were 18-19 parts of stabilizers and/or

gums, 5 to 6 parts of soy protein and 0.5 to 1.5 parts of ascorbic acid. The stabilizer solution was pumped to the make-up tank and mixed with the juice mix. Then about 400 parts of water was added to give the final juice mixture having a brix of about 25, a pH of about 4.3.

This juice mixture was heat treated at about 90-95° C for about half a minute, cooled and packed in aseptic containers such as about 6.5 liter bags and stored or shipped to the customer. At the customer's the juice mixture was charged to an ice soft-freeze machine to form a soft creamy all-fruit juice, peach flavored frozen cream that could be sold and eaten like ice cream. The taste and flavor was good and simulated the taste of peaches. Also, this peach juice mixture could be aseptically sealed in a paper carton such as those described in U.S. Patents 3,347,444 or 4,287,247 and be kept under cooling for several days or a week before being consumed. Actually, it could be held for a few days at room temperature before being consumed. Thus, this specific embodiment provides a strawberry, peach or orange flavored all-fruit drink or cream.

Example 4

15

The procedure of Example 3 was repeated except instead of peach, a strawberry juice mixture was prepared using strawberry flavor at 44.7 brix. This strawberry juice mixture could be stored and consumed as a drink or could be frozen to give a strawberry soft or hard cream with excellent acceptance.

Example 5

20

The procedure of Example 3 may be used with deionized apple juice 72° brix to form a peach flavored juice mixture or with the procedure of Example 4 to produce a strawberry juice mixture. It should be appreciated that either high acid or low acid apple juice may be used with suitable adjustment of the acid level to give a titratable acid level within range of 0.4 to 0.7 and a pH of preferably 3.5 to about 4.6.

25

Instead of deionized juice of Example 3, a juice which has been subjected to ultrafiltration may be used to produce products of this invention.

While in accordance with the patent statutes, a best mode and preferred embodiment have been set forth, the invention is to be measured by the scope of the attached claims.

30

Claims

- 35 1. A fruit juice mixture capable of being frozen to give at least 50 percent overrun and being eaten as frozen, comprising:
at least one type of fruit juice;
from about 0.05 percent to about 1.5 percent by weight of at least one stabilizer based upon the total weight of said mixture, said stabilizer being derived from a natural source;
40 from about 0.05 percent to about .15 percent by weight of a vegetable protein based upon the total weight of said mixture;
an amount of remaining ingredients including water such that said mixture has an overall brix value of from about 10 to about 35, and said blend being free of sugar and corn sweetener additives.
- 45 2. A fruit juice mixture according to claim 1, wherein said stabilizers are selected from the group consisting of guar gum, locust bean gum, xanthan gum, carrageenan, an alginate, a cellulose gum, a pectin, and combinations thereof.
- 50 3. A fruit juice mixture according to claim 1, wherein said juice type is selected from the group consisting of fruit juice, fruit juice concentrate, fruit juice puree, fruit juice puree concentrate, modified juice, modified juice concentrate, and combinations thereof.
4. A fruit juice mixture according to claim 3, wherein the overall amount of said stabilizers is from about .35 percent to about .60 percent by weight.
- 55 5. A fruit juice mixture according to claim 4, wherein said stabilizers are guar gum, locust bean gum, and carrageenan, and wherein the amount of said guar gum ranges from about .14 to about .24 percent by weight, wherein the amount of said locust bean gum ranges from about .17 to about .29 percent by

gums, 5 to 6 parts of soy protein and 0.5 to 1.5 parts of ascorbic acid. The stabilizer solution was pumped to the make-up tank and mixed with the juice mix. Then about 400 parts of water was added to give the final juice mixture having a brix of about 25, a pH of about 4.3.

This juice mixture was heat treated at about 90-95° C for about half a minute, cooled and packed in aseptic containers such as about 6.5 liter bags and stored or shipped to the customer. At the customer's the juice mixture was charged to an ice soft-freeze machine to form a soft creamy all-fruit juice, peach flavored frozen cream that could be sold and eaten like ice cream. The taste and flavor was good and simulated the taste of peaches. Also, this peach juice mixture could be aseptically sealed in a paper carton such as those described in U.S. Patents 3,347,444 or 4,287,247 and be kept under cooling for several days or a week before being consumed. Actually, it could be held for a few days at room temperature before being consumed. Thus, this specific embodiment provides a strawberry, peach or orange flavored all-fruit drink or cream.

Example 4

The procedure of Example 3 was repeated except instead of peach, a strawberry juice mixture was prepared using strawberry flavor at 44.7 brix. This strawberry juice mixture could be stored and consumed as a drink or could be frozen to give a strawberry soft or hard cream with excellent acceptance.

Example 5

The procedure of Example 3 may be used with deionized apple juice 72° brix to form a peach flavored juice mixture or with the procedure of Example 4 to produce a strawberry juice mixture. It should be appreciated that either high acid or low acid apple juice may be used with suitable adjustment of the acid level to give a titratable acid level within range of 0.4 to 0.7 and a pH of preferably 3.5 to about 4.6.

Instead of deionized juice of Example 3, a juice which has been subjected to ultrafiltration may be used to produce products of this invention.

While in accordance with the patent statutes, a best mode and preferred embodiment have been set forth, the invention is to be measured by the scope of the attached claims.

Claims

1. A fruit juice mixture capable of being frozen to give at least 50 percent overrun and being eaten as frozen, comprising:
at least one type of fruit juice;
from about 0.05 percent to about 1.5 percent by weight of at least one stabilizer based upon the total weight of said mixture, said stabilizer being derived from a natural source;
from about 0.05 percent to about .15 percent by weight of a vegetable protein based upon the total weight of said mixture;
an amount of remaining ingredients including water such that said mixture has an overall brix value of from about 10 to about 35, and said blend being free of sugar and corn sweetener additives.
2. A fruit juice mixture according to claim 1, wherein said stabilizers are selected from the group consisting of guar gum, locust bean gum, xanthan gum, carrageenan, an alginate, a cellulose gum, a pectin, and combinations thereof.
3. A fruit juice mixture according to claim 1, wherein said juice type is selected from the group consisting of fruit juice, fruit juice concentrate, fruit juice puree, fruit juice puree concentrate, modified juice, modified juice concentrate, and combinations thereof.
4. A fruit juice mixture according to claim 3, wherein the overall amount of said stabilizers is from about .35 percent to about .60 percent by weight.
5. A fruit juice mixture according to claim 4, wherein said stabilizers are guar gum, locust bean gum, and carrageenan, and wherein the amount of said guar gum ranges from about .14 to about .24 percent by weight, wherein the amount of said locust bean gum ranges from about .17 to about .29 percent by



weight, and wherein the amount of carrageenan ranges from about .1 to about .14 percent by weight.

6. A fruit juice mixture according to claim 5, wherein the overall brix value of said mixture is from about 23 to about 26.
7. A fruit juice mixture according to any preceding claim, wherein the vegetable protein comprises soy protein.
8. A fruit juice mixture according to any preceding claim, including citric acid, malic acid, an ascorbic acid and other organic acids inherent in fruits.
9. A fruit juice mixture according to claim 1,2,4,6, or 8, wherein said mixture is whipped and/or frozen.
10. A smooth cream comprising:
 - an aerosol of a fruit juice mixture having sufficient air whipped therein to give a smooth texture at a temperature of minus 40° C to 10° C and an expansion of volume of said fruit juice mixture of 20 to 200 percent by volume, said fruit juice mixture including at least one fruit juice;
 - from about 0.05 percent to about 1.5 percent by weight of at least one stabilizer based upon the total weight of said mixture, said stabilizer being derived from a natural source of gums;
 - from about 0.05 percent to about 0.15 percent by weight of a soy protein based upon the total weight of said mixture;
 - an amount of remaining ingredients including water such that said mixture has an overall brix value of from about 20 to about 35, and said blend being free of sugar and corn sweetener additives.
11. The cream according to claim 10, wherein said stabilizers are selected from the group consisting of guar gum, locust bean gum, carrageenan, an alginate, a cellulose gum, a pectin, and combinations thereof.
12. The cream, according to claim 10, wherein said juice type is selected from the group consisting of fruit juice, fruit juice concentrate, fruit juice puree, fruit juice puree concentrate, modified juice, modified juice concentrate, and combinations thereof.
13. The cream, according to claim 10, wherein the overall amount of stabilizers is from about 0.02 percent to about 0.06 percent by weight.
14. The fruit juice mix of claim 1, wherein the contents of the mix is at least about 25 percent to about 45 percent fructose and about 30 percent to about 10 percent glucose, and no more than 10 percent of other sweeteners of the saccharide class.
15. The cream of claim 10 wherein said mixture has a brix value of 23 to 27 at the time it is frozen to give a cream having a high overrun.
16. The fruit juice mixture of claim 1 wherein at least one of the juices present has been contacted with an ion exchange resin or subjected to ultrafiltration.
17. The fruit juice mixture of claim 16 wherein a flavoring ingredient has been added to complement any flavor removed by contact of the juice with the ion exchange resin or ultrafiltration.
18. The fruit juice mixture of claim 16 wherein sufficient acid is added to adjust the mixture's tartness and pH to about 3.5 to about 5.5.
19. The fruit juice mixture of claim 1, 17 or 18 wherein the fruit juice contacted with the ion exchange resin is from a berry.
20. The fruit juice mixture of claim 19 wherein the berry is a strawberry.
21. A cream comprising



- an aerosol of a fruit juice mixture having sufficient air or gas incorporated therein to give an overrun volume of at least about 55 percent, said mixture being a mixture of at least one juice that has been contracted with an ion exchange resin or subjected to ultrafiltration,
- 5 from about 0.05 to about 1.5 percent by weight of at least one stabilizer, and about 0.05 to .5 percent of a vegetable protein whipping agent on a total solid basis, said juice mixture having a brix of 20 to 30°.
22. A fruit juice mixture having the flavor of red, orange or yellow colored juice comprising
10 a deionized or ultrafiltered juice, a concentrate or a puree of said colored juice and a flavoring, 0.05 to 1.5 percent by weight of a stabilizer, 0.05 to about 0.5 percent of a vegetable protein whipping agent for a specific colored juice, and sufficient water to give the mixture a brix of 20 to 35°.
- 15 23. The juice mixture of claim 22 wherein the colored juice is strawberry or peach and the deionized juice is apple or pear.
24. The mixture of claim 23 wherein the deionized or ultrafiltered juice comprises at least a major portion of
20 said mixture.
25. The mixture of claim 24 wherein a vitamin is added to the mixture.
26. The fruit juice mixture of claim 1, characterised as an aseptic, storable fruit juice mixture comprising a
25 deionized or ultrafiltered juice selected from apple or pear juice blended with a minor amount of a red, orange or yellow colored juice, said red, orange or yellow colored juice being blended therein as a concentrate, puree or a mixture and the concentration of said juice mixture adjusted with water to give a brix of 20 to 30°.
- 30 27. An aseptic storable fruit juice mixture comprised of a minor amount of red, orange or yellow coloured juice and another juice selected from the class consisting of apple, grape or pear to form a mixture containing sufficient water to give a brix of 20 to 30°, from about 0.05 percent to about 1.5 percent by weight of at least one stabilizer based upon the total weight of said mixture, said stabilizer being derived from a natural source; and
35 from about 0.05 percent to about .15 percent by weight of a vegetable protein based upon the total weight of said mixture.

Revendications

- 40 1. Mélange de jus de fruit pouvant être gelé de manière à présenter un gonflement d'au moins 50 pour cent et étant consommé à l'état gelé, comprenant:
un type de jus de fruit;
entre environ 0,05 pour cent et environ 1,5 pour cent en poids d'au moins un agent de stabilisation,
45 rapporté au poids total dudit mélange, ledit agent de stabilisation étant tiré d'une source naturelle;
entre environ 0,05 pour cent et 0,15 pour cent en poids d'une protéine végétale rapporté au poids total dudit mélange;
une quantité d'autres ingrédients y compris l'eau, de sorte que ledit mélange possède un degré brix total compris entre environ 10 et 35, ledit mélange étant exempt de sucre et d'additifs édulcorants à
50 base de maïs.
2. Mélange de jus de fruit selon la revendication 1, dans lequel lesdits agents de stabilisation sont choisis dans le groupe incluant la gomme de guar, la gomme de caroube, la gomme de xanthane, le carrageenan, l'alginate, une gomme de cellulose, la pectine et des combinaisons de ces substances.
- 55 3. Mélange de jus de fruit selon la revendication 1, dans lequel ledit type de jus est choisi dans le groupe incluant le jus de fruit, le concentré de jus de fruit, la purée de jus de fruit, le concentré de purée de jus de fruit, du jus modifié, du concentré de jus modifié et des combinaisons de ces substances.



4. Mélange de jus de fruit selon la revendication 3, dans lequel la quantité totale des agents de stabilisation est comprise entre environ 0,35 pour cent et environ 0,60 pour cent en poids.
5. Mélange de jus de fruits selon la revendication 4, dans lequel lesdits agents de stabilisation sont la gomme de guar, la gomme de caroube et le carrageenan, et dans lequel la quantité de ladite gomme de guar est comprise entre environ 0,14 et environ 0,24 pour cent en poids, la quantité de ladite gomme de caroube est comprise entre environ 0,17 et environ 0,29 pour cent en poids et la quantité du carrageenan est comprise entre environ 0,1 et environ 0,14 pour cent en poids.
6. Mélange de jus de fruit selon la revendication 5, dans lequel le degré brix global dudit mélange est compris entre environ 23 et environ 26.
7. Mélange de jus de fruit selon l'une quelconque des revendications précédentes, dans lequel la protéine végétale comprend une protéine de soja.
8. Mélange de jus de fruit selon l'une quelconque des revendications précédentes, contenant de l'acide citrique, de l'acide maléique, un acide ascorbique et d'autres acides organiques propres aux fruits.
9. Mélange de jus de fruit selon la revendication 1,2,4,6 ou 8, dans lequel ledit mélange est battu et/ou gelé.
10. Crème sucrée comprenant:
un aérosol d'un mélange de jus de fruit dans lequel une quantité suffisante d'air est introduite par fouettage de manière à fournir un goût sucré, à une température comprise entre moins 40 °C et 10 °C, avec une dilatation de volume dudit mélange de jus de fruit comprise entre 20 et 200 pour cent en volume, ledit mélange de jus de fruit comprenant
au moins un jus de fruit;
entre environ 0,05 pour cent et environ 1,5 pour cent en poids d'au moins un agent de stabilisation, rapporté au poids total dudit mélange, ledit agent de stabilisation étant obtenu à partir d'une source naturelle de gommes;
entre environ 0,05 pour cent et environ 0,15 pour cent en poids d'une protéine de soja, rapporté au poids total dudit mélange;
une quantité d'autres ingrédients y compris de l'eau de manière que ledit mélange possède un degré brix global compris entre environ 20 et environ 35, et ledit mélange étant exempt de sucre et d'additifs édulcorants à base de maïs.
11. Crème selon la revendication 10, dans laquelle lesdits agents de stabilisation sont choisis dans le groupe incluant la gomme de guar, la gomme de caroube, le carrageenan, un alginat, une gomme de cellulose, de la pectine et des combinaisons de ces substances.
12. Crème selon la revendication 10, dans laquelle ledit type de jus est choisi dans le groupe incluant un jus de fruit, un concentré de jus de fruit, une purée de jus de fruit, un concentré de purée de jus de fruit, un jus modifié, un concentré de jus modifié et des combinaisons de ces substances.
13. Crème selon la revendication 10, dans laquelle la quantité totale d'agents de stabilisation est comprise entre environ 0,02 pour cent et environ 0,06 pour cent en poids.
14. Mélange de jus de fruit selon la revendication 1, dans lequel le contenu du mélange contient entre au moins environ 25 pour cent et environ 45 pour cent de fructose et entre environ 30 pour cent et environ 10 pour cent de glucose, et pas plus de 10 pour cent d'autres édulcorants de la classe des saccharides.
15. Crème selon la revendication 10, dans laquelle ledit mélange possède un degré brix compris entre 23 et 27 au moment où il est amené à l'état gelé de manière à fournir une crème présentant un gonflement important.
16. Mélange de jus de fruit selon la revendication 1, dans lequel au moins l'un des jus présents a été condensé à l'aide d'une résine échangeuse d'ions ou a été soumis à une ultrafiltration.



17. Mélange de jus de fruit selon la revendication 16, dans lequel une substance aromatique a été ajoutée de manière à compléter l'arôme retiré sous l'effet du contact du jus avec la résine échangeuse d'ions ou lors de l'ultrafiltration.
- 5 18. Mélange de jus de fruit selon la revendication 16, dans lequel une quantité suffisante d'acide est ajoutée pour régler l'acidité et le pH du mélange entre environ 3,5 et environ 5,5.
19. Mélange de jus de fruit selon la revendication 1, 17 ou 18, dans lequel le jus de fruit condensé au moyen de la résine échangeuse d'ions est tiré d'une baie.
- 10 20. Mélange de jus de fruit selon la revendication 19, dans lequel la baie est une fraise.
21. Crème comprenant
un aérosol d'un mélange de jus de fruit dans lequel est incorporée une quantité suffisante d'air ou de
15 gaz de manière à lui conférer un volume de gonflement égal à au moins environ 55 pour cent, ledit mélange étant
un mélange d'au moins un jus, qui a été condensé à l'aide d'une résine échangeuse d'ions et a été soumis à une ultrafiltration,
entre environ 0,05 et environ 1,5 pour cent en poids d'au moins un agent de stabilisation, et
20 entre environ 0,05 et 0,5 pour cent d'un agent moussant formé d'une protéine végétale, sur une base solide totale, ledit mélange de jus possédant un degré brix compris entre 20 et 30.
22. Mélange de jus de fruit possédant le goût d'un jus coloré rouge, orange ou jaune, comprenant
- un jus désionisé ou ayant subi l'ultrafiltration,
25 - un concentré ou une purée dudit jus coloré et d'une substance aromatique,
- 0,05 à 1,5 pour cent en poids d'un agent de stabilisation,
- 0,05 à environ 0,5 pour cent d'un agent moussant formé d'une protéine végétale pour un jus coloré spécifique, et
une quantité d'eau suffisante pour conférer au mélange un degré brix compris entre 20 et 35.
- 30 23. Mélange de jus de fruit selon la revendication 22, dans lequel le jus coloré est celui d'une fraise ou d'une pêche et le jus désionisé est celui d'une pomme ou d'une poire.
24. Mélange selon la revendication 23, dans lequel le jus désionisé ou ayant subi l'ultrafiltration forme au
35 moins une partie principale dudit mélange.
25. Mélange selon la revendication 24, dans lequel une vitamine est ajoutée au mélange.
26. Mélange de jus de fruit selon la revendication 1, caractérisé comme étant un mélange de jus de fruit
40 aseptique pouvant être stocké, comprenant un jus désionisé ou ayant subi l'ultrafiltration choisi entre un jus de pomme ou un jus de pêche mélangé à une faible quantité d'un jus coloré en rouge, orange ou jaune,
ledit jus coloré en rouge, orange ou jaune étant mélangé dans le mélange sous la forme d'un concentré, d'une purée ou d'un mélange et la concentration dudit mélange de jus étant réglée au
45 moyen d'eau de manière à fournir un degré brix compris entre 20 et 30.
27. Mélange de jus de fruit aseptique pouvant être stocké, constitué par une faible quantité d'un jus coloré en rouge, orange ou jaune et d'un autre jus choisi parmi la classe incluant des jus de pomme, de raisin ou de poire pour former un mélange contenant une quantité suffisante d'eau pour obtenir un degré brix
50 compris entre 20 et 30,
entre environ 0,05 pour cent et environ 1,5 pour cent en poids d'au moins un agent de stabilisation, rapporté au poids total dudit mélange, ledit agent de stabilisation étant tiré d'une source naturelle; et
entre environ 0,05 pour cent et environ 0,15 pour cent en poids d'une protéine végétale, rapporté au poids total dudit mélange.
- 55

Ansprüche



1. Fruchtsaftmischung, die unter Erzielung einer mindestens 50%igen Volumenzunahme gefrierbar und gefroren eßbar ist, enthaltend:
 - mindestens eine Art Fruchtsaft;
 - etwa 0,05 bis etwa 1,5 Gew.-% mindestens eines Stabilisators, bezogen auf das Gesamtgewicht der Mischung, wobei sich der Stabilisator aus einem natürlichen Vorkommen herleitet;
 - etwa 0,05 bis etwa 0,15 Gew.-% eines pflanzlichen Proteins, bezogen auf das Gesamtgewicht der Mischung;
 - eine derartige Menge der restlichen Bestandteile einschließlich Wasser, daß die Mischung einen Gesamt-Brixwert von etwa 10 bis etwa 35 aufweist, und wobei die Mischung frei ist von Zucker- und Mais-Süße-Additiven oder Süßungsmitteln aus Mais als Additiven.
2. Fruchtsaftmischung nach Anspruch 1, **dadurch gekennzeichnet**, daß die Stabilisatoren ausgewählt sind aus der Gruppe aus Guargummi, Johannisbrotgummi, Carragenan, einem Alginat, einem Cellulosegummi, einem Pectin und Kombinationen derselben.
3. Fruchtsaftmischung nach Anspruch 1, **dadurch gekennzeichnet**, daß die Fruchtsaftart ausgewählt ist aus der Gruppe aus Fruchtsaft, Fruchtsaftkonzentrat, Fruchtsaftpüree, Fruchtsaftpüreekonzentrat, modifiziertem Fruchtsaft, modifiziertem Fruchtsaftkonzentrat und Kombinationen derselben.
4. Fruchtsaftmischung nach Anspruch 3, **dadurch gekennzeichnet**, daß die Gesamtmenge der Stabilisatoren etwa 0,35 bis etwa 0,60 Gew.-% beträgt.
5. Fruchtsaftmischung nach Anspruch 4, **dadurch gekennzeichnet**, daß die Stabilisatoren Guargummi, Johannesbrotgummi, und Carragenan sind, und daß die Menge an Guargummi etwa 0,14 bis etwa 0,24 Gew.-%, die Menge an Johannisbrotgummi etwa 0,17 bis etwa 0,29 Gew.-% und die Menge an Carragenan etwa 0,1 bis etwa 0,14 Gew.-% beträgt.
6. Fruchtsaftmischung nach Anspruch 5, **dadurch gekennzeichnet**, daß der Gesamtbrixwert der Mischung etwa 23 bis etwa 26 beträgt.
7. Fruchtsaftmischung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß das pflanzliche Protein Sojaprotein enthält.
8. Fruchtsaftmischung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß sie Zitronensäure, Maleinsäure, eine Ascorbinsäure und andere fruchteigene organische Säuren enthält.
9. Fruchtsaftmischung nach Anspruch 1, 2, 4, 6 oder 8, **dadurch gekennzeichnet**, daß die Mischung geschlagen und/oder gefroren ist.
10. Weiche Creme enthaltend:
 - ein Aerosol einer Fruchtsaftmischung mit ausreichender darin eingeschlagener Luft zur Erzielung einer weichen oder glatten Textur bei einer Temperatur von -40°C bis 10°C und einer Volumenexpansion der Fruchtsaftmischung von 20 bis 200 Vol.-%, wobei die Fruchtsaftmischung
 - mindestens einen Fruchtsaft;
 - etwa 0,05 bis etwa 1,5 Gew.-% mindestens eines Stabilisators, bezogen auf das Gesamtgewicht der Mischung, wobei sich der Stabilisator aus einem natürlichen Vorkommen von Gummi herleitet;
 - etwa 0,05 bis etwa 0,15 Gew.-% eines Sojaproteins, bezogen auf das Gesamtgewicht der Mischung;
 - eine derartige Menge der restlichen Bestandteile einschließlich Wasser, daß die Mischung einen Gesamtbrixwert von etwa 20 bis etwa 35 aufweist, enthält und wobei die Mischung frei ist von Zucker- und Mais-Süße-Additiven.
11. Creme nach Anspruch 10, **dadurch gekennzeichnet**, daß die Stabilisatoren ausgewählt sind aus der Gruppe aus Guargummi, Johannisbrotgummi, Carragenan, einem Alginat, einem Cellulosegummi, einem Pectin und Kombinationen derselben.
12. Creme nach Anspruch 10, **dadurch gekennzeichnet**, daß die Fruchtsaftart ausgewählt ist aus der



Gruppe aus Fruchtsaft, Fruchtsaftkonzentrat, Fruchtsaftpüree, Fruchtsaftpüreekonzentrat, modifiziertem Fruchtsaft, modifiziertem Fruchtsaftkonzentrat und Kombinationen derselben.

- 5 13. Creme nach Anspruch 10, **dadurch gekennzeichnet**, daß die Gesamtmenge an Stabilisatoren etwa 0,02 bis etwa 0,6 Gew.-% beträgt.
- 10 14. Fruchtsaftmischung nach Anspruch 1, **dadurch gekennzeichnet**, daß die Mischung mindestens etwa 25 bis etwa 45% Fructose und etwa 30 bis etwa 10% Glucose, und nicht mehr als 10% andere Süßungsmittel der Saccharidklasse enthält.
- 15 15. Creme nach Anspruch 10, **dadurch gekennzeichnet**, daß die Mischung zur Zeit des Gefrierens einen Brixwert von 23 bis 27 aufweist, um eine Creme mit einer großen Volumenzunahme zu erzielen.
- 16 16. Fruchtsaftmischung nach Anspruch 1, **dadurch gekennzeichnet**, daß mindestens einer der anwesenden Fruchtsäfte mit einem Ionenaustauscherharz kontaktiert oder Ultrafiltration unterworfen worden ist.
- 20 17. Fruchtsaftmischung nach Anspruch 16, **dadurch gekennzeichnet**, daß ein Aromabestandteil zugegeben worden ist, um sämtliches Aroma zu ergänzen, das durch Kontakt des Fruchtsaftes mit dem Ionenaustauscherharz oder durch Ultrafiltration entfernt wurde.
- 25 18. Fruchtsaftmischung nach Anspruch 16, **dadurch gekennzeichnet**, daß genügend Säure zugegeben wird, um die Säure der Mischung und den pH-Wert auf etwa 3,5 bis etwa 5,5 einzustellen.
19. Fruchtsaftmischung nach Anspruch 1, 17 oder 18, **dadurch gekennzeichnet**, daß der mit dem Ionenaustauscherharz kontaktierte Fruchtsaft von einer Beere stammt.
20. Fruchtsaftmischung nach Anspruch 19, **dadurch gekennzeichnet**, daß die Beere eine Erdbeere ist.
- 30 21. Creme enthaltend
 - ein Aerosol einer Fruchtsaftmischung, dem genügend Luft oder Gas zur Erzielung einer Volumenzunahme von mindestens 55% einverleibt ist, wobei die Mischung
 - eine Mischung ist von mindestens einem Fruchtsaft, der mit einem Ionenaustauscherharz kontaktiert oder Ultrafiltration unterworfen worden ist,
 - etwa 0,05 bis etwa 1,5 Gew.-% mindestens eines Stabilisators, und
 - 35 - etwa 0,05 bis 0,5% eines pflanzlichen Proteins als Schlagmittel, bezogen auf die gesamten Festkörper, wobei die Fruchtsaftmischung einen Brixwert von 20 bis 30° hat.
- 40 22. Fruchtsaftmischung mit dem Aroma von rot-, orange- oder gelbgefärbtem Fruchtsaft enthaltend:
 - einen entmineralisierten oder ultrafiltrierten Fruchtsaft,
 - ein Konzentrat oder ein Püree des gefärbten Fruchtsafts und einen Aromastoff,
 - 0,05 bis 1,5 Gew.-% eines Stabilisators,
 - 0,05 bis 0,5% eines pflanzlichen Proteins als Schlagmittel für einen speziell gefärbten Fruchtsaft, und
 - 45 - ausreichend Wasser, um der Mischung einen Brixwert von 20 bis 35° zu verleihen.
23. Fruchtsaftmischung nach Anspruch 22, **dadurch gekennzeichnet**, daß der gefärbte Fruchtsaft Erdbeer- oder Pfirsichsaft ist und daß der entmineralisierte Saft Apfel- oder Birnensaft ist.
- 50 24. Mischung nach Anspruch 23, **dadurch gekennzeichnet**, daß der entmineralisierte oder ultrafiltrierte Saft mindestens einen Hauptteil der Mischung ausmacht.
25. Mischung nach Anspruch 24, **dadurch gekennzeichnet**, daß derselben ein Vitamin zugegeben wird.
- 55 26. Fruchtsaftmischung nach Anspruch 1, charakterisiert als aseptische, lagerfähige Fruchtsaftmischung mit einem Gehalt an einem entmineralisierten oder ultrafiltrierten Fruchtsaft, ausgewählt aus Apfel- oder Birnensaft, vermischt mit einer geringen Menge eines rot-, orange- oder gelbgefärbten Fruchtsaftes,
 - wobei der rot-, orange- oder gelbgefärbte Fruchtsaft darin als Konzentrat, Püree oder Mischung eingemischt ist und die Konzentration der Fruchtsaftmischung mit Wasser auf einen Brixwert von



20 bis 30° eingestellt wird.

- 5 27. Aseptische lagerfähige Fruchtsaftmischung enthaltend eine geringere oder bestehend aus einer geringeren Menge an rot-, orange- oder gelbgefärbtem Fruchtsaft und anderem Fruchtsaft ausgewählt aus der Gruppe aus Apfel, Trauben oder Birne, um eine Mischung zu bilden, die genügend Wasser zur Erzielung eines Brixwertes von 20 bis 30° enthält,
- etwa 0,05 bis etwa 1,5 Gew.-% mindestens eines Stabilisators, bezogen auf das Gesamtgewicht der Mischung, wobei sich der Stabilisator aus einem natürlichen Vorkommen herleitet; und
 - etwa 0,05 bis etwa 0,15 Gew.-% eines pflanzlichen Proteins, bezogen auf das Gesamtgewicht der Mischung.
- 10

15

20

25

30

35

40

45

50

55

