

# United States Patent

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- Continuation-in-part of application Ser. No. 502,439, Oct. 22, 1965, now abandoned. This application July 29, 1968, Ser. No. 748,187**

- [54] EDIBLE COMPOSITION AND AEROSOL PACKAGE CONTAINING THE SAME**  
**5 Claims, No Drawings**

- |      |                      |                                                              |
|------|----------------------|--------------------------------------------------------------|
| [52] | U.S. Cl.....         | 99/189,<br>99/142, 99/26, 99/20                              |
| [51] | Int. Cl.....         | A23g 1/00                                                    |
| [50] | Field of Search..... | 99/23, 24,<br>25, 26, 60, 78, 79, 144, 171, 189; 226/69, 100 |

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**ABSTRACT:** The invention relates to syrups whose viscosity has been reduced to such a degree that they not only can be discharged from a valved pressurized container through a standard nozzle as distinguished from the special small diameter nozzle made necessary by known higher viscosity syrups, in the form of a high-velocity stream into a portable liquid, but will allow a sufficiently high sugar content to render the mix self-sterilizing.

# EDIBLE COMPOSITION AND AEROSOL PACKAGE CONTAINING THE SAME

This application is a continuation-in-part of my application Ser. No. 502,439, filed Oct. 22, 1965, now abandoned.

My invention relates to flavoring compositions intended to be dispensed from an aerosol or pressurized container and discharged into a container of milk or water for producing a flavored milk- or water-based drink, and to an aerosol package for dispensing such composition.

The invention relates in particular to flavored food syrups which can be dispensed from an aerosol container in the form of a jet and into a body of milk to form flavored drinks, and especially flavored milk shakes such as chocolate or fruit-flavored milk shakes.

There has recently been marketed an aerosol dispenser containing a syrup, such as chocolate syrup, which is ejected at such high speed from an aerosol or pressurized container that the jet is self-agitating, i.e., self-distributing in a body of milk, so that stirring by hand to produce a milk shake is rendered unnecessary. This is accomplished as disclosed in the U.S. Pat. to Fox No. 2,977,231, dated Mar. 28, 1961, by reducing the size of the nozzle discharge orifice of the aerosol dispenser to a valve below that of the standard aerosol valves, the diameter of the discharge orifice of the nozzle, according to the Fox patent, being in the range of 0.05 to 0.09 inch.

The reduction in the size of the nozzle orifice, aside from the fact that it required the redesigning of the standard nozzle of aerosol dispensers, has the disadvantage that blocking and clogging of the orifice is more likely to occur with the relatively viscous syrups that are to pass therethrough. Also, because of the reduced size of the jet, i.e., the reduced diameter thereof, a longer period of time is required to inject a given quantity of syrup into a glass of milk or the like.

I have now found that it is possible to obtain the self-agitating and self-distributing function of a high speed jet with the use of the standard aerosol nozzle, i.e., without reducing the approximately 0.125-inch diameter of the orifice of the long known and used standard nozzle. I have found that instead of changing the dimensions of the nozzle, substantially the same self-agitating and self-distributing effect can be obtained by suitably modifying the syrup discharged by the aerosol or pressurized container. As I have discovered, this result can be accomplished by modifying the composition of the syrup to effect a reduction in the viscosity of the syrup without substantially reducing the concentration of the flavoring agent in the syrup and even despite increase of the concentration of the flavoring agent in the case of chocolate.

It is the general object of the present invention to provide a flavored composition to be dispensed by aerosol or pressurized dispensers having nozzles with the standard orifice of 0.125 inch which will discharge a high velocity, self-agitating and self-distributing jet of the flavored composition into a body of, for example, milk and will produce a drink having the flavor and "feel" of a milk shake.

It is also an object of the invention to provide a flavored syrup which is of such viscosity and flavor concentration that in relatively low proportion, with reference to the body of milk into which it is injected, a pleasing drink is obtained, so that an economically large number of "doses" of the aerosol contents can be obtained with an aerosol package of the usual convenient dimensions.

It is a further object of the invention to provide an aerosol-dispensed composition for the preparation of thin or regular milk shakes and the like which is so constituted that on admixture with milk, a drink is obtained having an improved body, i.e., one whose viscosity is somewhat greater than the arithmetical mean of the two mixed liquid components, taking into account the proportionate amounts of the liquid mixtures.

It is a still further object of the invention to provide a chocolate syrup for dispensing from a standard aerosol container (operating at the standard pressure of about 100 lb./sq.in. and with the above-mentioned standard nozzle orifice of 0.125-inch diameter) which is of such a high concentration with respect to the cocoa content that three-fourths ounce or even

one-half ounce of the syrup is sufficient to flavor satisfactorily 7 ounces of milk (liquid measure) or the like, so that an increased number of shakes can be obtained from a single aerosol container in comparison with known syrup dispensers of the same size.

It is an additional object of the invention to provide an edible syrup composition which, while of sufficiently low viscosity to be ejected by the standard aerosol nozzle at a speed sufficient to effect self-distribution in a tumbler containing a column of milk of about 7 ounces in volume, has a sufficiently high concentration of a sugar to make it resistant to fungal and bacterial attack.

Further objects and advantages of the invention will appear from the following more detailed description thereof.

According to the present invention, there is provided a syrup composition which, although of sufficiently low viscosity to be capable of discharge at high velocity through a nozzle of known standard dimensions, is yet capable of yielding a milk shake of satisfactory body or viscosity and without the need for hand stirring or stirring with a hand operated or electrically operated stirring device.

My improved syrup composition may include a chemical gelling agent which has been dissolved in water together with other substances nonreactive therewith, such as sugar or other sweetening agent or agents, a flavoring agent, and if desired, also a stabilizer, an emulsifier, and a preservative, the mixture being packaged in a pressurized can (commonly known as an aerosol can or dispenser) and is dispensed in the form of a high-speed jet directed into the column of milk by operation of the discharge valve of the dispenser in known manner. The discharged jet is of sufficiently high velocity that it agitates the milk or other base to such an extent as to form a uniform dispersion, the syrup being of such composition that a uniformly increased viscosity throughout the body of milk is obtained, this being made possible by the fact that the active gelling agent is already in solution.

In order to obtain a product which can be properly dispensed from a pressurized can with a standard nozzle, the viscosity of the syrup should be below about 250 cps.; this limits the amount of the gelling agent that can be used and therefore the dilution ratio.

The thickening agent commonly employed in syrups is carageenin, but for materially increasing the viscosity of the milk shake while not increasing the viscosity of the syrup to the point at which ejection from the aerosol nozzle at the standard (or maximum permissible) propelling gas pressure is no longer possible, I employ a sodium or potassium alginate of low viscosity in aqueous solution. The sodium alginate is generally preferred, and is one produced at my request by Marine Colloids Inc., of 2 Edison Place, Springfield, N.J. and is designated by the numeral 10 or by the symbol LVA-10, indicating a much lower molecular weight and viscosity in aqueous solution than those of the heretofore commonly known sodium alginate 50. I have found the latter to be unsuitable for my compositions because of excessive viscosity, and that an alginate of considerably lower number designation must be employed. A sodium alginate corresponding to the designation 10 is highly satisfactory, but it may be possible to employ alginates having a designation number of 5 and possibly one as high as 20 or somewhat higher (but considerably below 50) but so far as I am aware, only No. 10 is presently available of those having values below 50. In the appended claims, these suitable alginates will be designated as "low viscosity alginate."

The sodium alginate (LVA-10) is dissolved in water in such proportion that in the final syrup it constitutes about one-half to one percent by weight of the mixture. The alginate reacts with the calcium ions in the milk and with the proteins to form a gel, and as it is in solution when it enters the milk, gelling takes place rapidly. However, because of its low concentration, the degree of thickening of the milk remains within the maximum acceptable for a thin milk shake.

It will thus be seen that the gel-producing material is kept separate from the substances which react therewith (milk protein, calcium ions, etc.). I can therefore dissolve the alginate to the necessary concentration in water (with sweetening agent, flavoring agent, gel-set timing agent, etc.) to the desired viscosity and package the same in an aerosol dispenser from which it is ejected in the form of a high-speed jet into a liquid material such as milk which has a gel-promoting agent normally present therein.

As I have found, and in accordance with the invention, when a substantial amount of a low-viscosity alginate, preferably sodium alginate, is incorporated in the syrups, there is obtained not only a very sharp increase in the viscosity of the mixture of the syrup with milk, considerably beyond the arithmetical mean, but the mixture with milk also does not produce "wheying out" if there is no immediate thorough mixing with the whole body of milk, as would be the case if a large proportion of carrageenin were used. The wheying out consists in the coagulation of the milk solids by the reaction of the carrageenin with the calcium ions in the milk, resulting in the formation of cheeselike curds. With the use of carrageenin, also, great care must be exercised in dosing the amount of the syrup composition, for even a slight excess can cause wheying out of the milk.

The syrups may contain an edible emulsifier, Tween 80 being preferred, and also a thickener in the form of a vegetable gum, such as carrageenin, in small proportions, the content of emulsifier, when used, being of the order of a few hundredths of one percent, while the thickener may be present to the extent of about 0.15 to 0.4 percent of the syrup to improve the feel of the drink on the palate. There is preferably used a stabilizer, such as various sodium phosphates, like tetrasodium pyrophosphate and sodium hexametaphosphate. A preservative is not essential but may be incorporated in the syrup, such as sodium benzoate, benzoic acid, sodium sorbate, sorbic acid, methyl paraben, and the like.

My improved syrup also contains such an increased concentration of a carbohydrate sugar, such as sucrose, maltose and invert sugar, that it contributes to the self-preserving qualities of the syrup. According to the invention, the solid sugar content constitutes from about 33 to 65 percent of total syrup. The cocoa content in the case of chocolate syrups may vary from about 5 to 14 percent by weight.

Any of the known propellant gases for food products can be employed, such as nitrogen, nitrous oxide, fluorinated hydrocarbons, and mixtures of carbon dioxide with any of the neutral gases, such as nitrous oxide. I have found that a higher percentage of carbon dioxide than heretofore employed, such as 17 to 35 percent, the other gas being nitrous oxide, favorably affects the pH of the syrup by reducing it to 5.0 to 5.5, which inhibits the growth of many fungi and bacteria, and which at the same time enables the preservatives to be more effective, so that, particularly with the relatively high sugar content, protection against the micro-organisms is provided even at room temperature for as much as three months or more, after the usual pasteurization; while longer periods of storage, as much as a year or more, are possible with refrigeration, and indefinitely if aseptically packed.

According to a further development of the invention, there is provided a syrup composition for chocolate milk shakes wherein the chocolate flavor is intensified to such a degree that as little as three-fourths ounce or 1 ounce, or even as little as one-half ounce of the syrup on being injected into a glass of milk of about 7 ounces, will yield a milk shake having a satisfactory chocolate flavor. To this end, the cocoa is treated in a manner to reduce its viscosity so that a larger concentration of the same can be employed in the syrup up to as much as 14 percent or more, with increasing the viscosity of the syrup beyond the point at which discharge at the necessary speed from the standard nozzle of an aerosol container becomes difficult. The pretreatment of the cocoa can be accomplished by producing a 20 percent suspension in water and heating the suspension to about 180° F. The suspension is

then cooled to 150° F. and there is added 0.3 to 0.6 percent (by weight of the cocoa) of amylase, after which the suspension can if desired be adjusted to a pH of approximately 5.5 to 5.6 with an edible acid such as lactic, citric and the like, at which degree of acidity the amylase has maximum activity. The mixture is maintained at 150° F. for about 20 minutes, after which it is heated to 180° F. until the amylase has been destroyed. The viscosity of the suspension is thereby greatly reduced.

I have found that the viscosity increasing effect of the sugar content can be counterbalanced by the employment of the amylase-treated cocoa and also by the employment of a hexose sugar in place of at least part of the disaccharide sucrose (or maltose), invert sugar being preferred. I have found that in general the content of sucrose and of hexose sugar (such as invert sugar or its components dextrose and also mannose and sorbose,) and the amylase-treated cocoa content can be so related that even though the total sugar content is sufficiently high to produce self-sterilization, a syrup viscosity no higher than about 250 cps. can be obtained, and even a viscosity of 190-210 cps., which is the preferred range.

Thus the present invention embraces a composition which has approximately as high a cocoa and sugar content as a well-known preparation presently on the market, yet has a much lower viscosity. By way of example, a 55 percent content of invert sugar is sufficient to make a syrup self-sterilizing, or in the case of sucrose, a content of 60 to 65 percent is generally necessary. The percentage sugar content is measured according to the fraction:

$$\text{sugar} \times 100 \text{ percent} \div \text{Sugar} + \text{Water} = \text{percent Sugar Content}$$

The term "sugar" in the above fraction is to be understood as referring to both di- and monosaccharides and mixtures thereof.

The present invention accordingly provides syrup formulations of chocolate and other flavors which can pass through nozzle openings of 0.125 inches at high, self-distributing speeds and which are self-sterilizing in character and at the same time are economical in use. According to the invention, also, more cocoa can be incorporated in the relatively low viscosity syrup without any material increase in the overall cost. The use of an amylase-treated cocoa allows a high cocoa content in the syrup while contributing so little to an increase in the viscosity as to permit a sufficiently high sugar content to promote self-sterilization and thereby eliminating a need for refrigeration.

In general, it will be found to be best to employ in the sugar component of the syrup, at least 50 percent of invert sugar and even as high as 90 percent, the remainder being sucrose; the preferred range thus being from 10 to 50 percent sucrose and 90 to 50 percent invert sugar. The preferred cocoa content is about 6 to 10 percent of the total weight of syrup.

The sucrose may be replaced in whole or in part with disaccharide such as maltose, while the invert sugar, which consists of dextrose and levulose, can be replaced in whole or in part by either of these sugars, or by sorbose or mannose.

Where the viscosity of a composition is low, i.e., in the case of the nonchocolate syrups, a quantity of an alginate, preferably sodium alginate, can be added, as where the sugar content is too low for self-sterilization. Such syrup should be refrigerated. In general, when the sugar is in the higher range for self-sterilization (e.g., about 55 percent invert sugar or about 60-65 percent sucrose), the use of alginate should be excluded.

#### EXAMPLE 1

##### Chocolate Syrup

| Syrup Ingredients       | Lbs. |
|-------------------------|------|
| Cocoa                   | 7.25 |
| Nonfat milk powder 1.97 |      |

|                                 |       |
|---------------------------------|-------|
| Vanilla Powder                  | 0.20  |
| Salt                            | 0.29  |
| Cane Sugar                      | 1.74  |
| Invert syrup (76% solids)       | 44.20 |
| Emulsifier (Tween 80)           | 0.04  |
| Water to make 100 lbs.          |       |
| Specific gravity 1.20 at 40° F. |       |
| Viscosity 56 cps. at 40° F.     |       |

When injected into seven parts of cold milk, a shake having a viscosity of about 15 cps. at 40° C. is obtained which is characterized by a superior flavor. The propellant gas can be composed of a mixture of 15 parts of carbon dioxide and 85 parts of nitrous oxide but a 20:80 ratio is preferred.

By adding one-half percent of sodium alginate to the above mixture, a syrup is obtained having a viscosity of about 100 cps., and when injected into seven parts of milk, yields a shake of about 100 cps. This viscosity is considerably greater (much more than the arithmetical mean, taking into consideration the proportions of the ingredients) than can be obtained in the absence of the sodium alginate. The latter is of the type hereinabove described, namely, an LVA-10.

## EXAMPLE 2

## Chocolate Syrup

| Syrup Ingredients                | Lbs.  |
|----------------------------------|-------|
| Cocoa                            | 5.45  |
| Nonfat Milk Powder               | 1.48  |
| Vanilla Powder                   | 0.15  |
| Salt                             | 0.22  |
| Cane Sugar                       | 1.30  |
| Invert Syrup (76% Solids)        | 33.00 |
| Emulsifier (Tween 80)            | 0.30  |
| Malt Extract (80% maltose) 25.00 |       |
| Water to make 100 lbs. syrup     |       |
| Specific gravity 1.24 at 40° F.  |       |
| Viscosity 145 cps. at 40° F.     |       |

Upon injection of one part of the above syrup into seven parts of milk, a chocolate milk shake is obtained having a viscosity of about 17 cps. The body of the shake can be considerably improved by adding about one-half percent of sodium alginate (LVA-10) to the syrup which will still yield a syrup which can be ejected at high velocity from a standard aerosol nozzle operating at a pressure of about 100 pounds per square inch.

## EXAMPLE 3

## Chocolate Syrup

| Syrup Ingredients               | Lbs. |
|---------------------------------|------|
| Cocoa                           | 8.9  |
| Milk Powder                     | 2.4  |
| Vanilla Powder                  | 0.25 |
| Salt                            | 0.35 |
| Cane Sugar                      | 2.1  |
| Invert Syrup (76% solids)       | 54.5 |
| Emulsifier (Tween 80)           | 0.04 |
| Water to make 100 lbs. syrup.   |      |
| Specific gravity 1.26 at 40° F. |      |
| Viscosity 225 cps. at 40° F.    |      |

The above viscosity is close to the maximum that can be satisfactorily ejected from a standard aerosol nozzle and at a speed sufficient to insure self-distribution in a glass of milk or the like. About three-fourths of an ounce of the above syrup can be employed for 7 ounces of milk and give a very pleasingly flavored chocolate milk shake.

By treatment of the cocoa in the manner above described, a syrup is obtained which, despite the use of a higher proportion of cocoa and sugar, has about the same viscosity (225 cps. at 40° F.), but by reason of the higher concentration of the flavoring agent (cocoa, with which a somewhat higher proportion of vanilla powder can be employed if desired), only one-half ounce of the syrup need be used for 7 ounces of milk to yield a satisfactorily flavored chocolate milk shake. By the use of the same quantity (8.9 pounds) of this pretreated cocoa in example 3, a resultant viscosity of 125 cps. is obtained instead of 225 cps. There can be employed 12 to 13 percent of the pretreated cocoa and the sugar content can be increased to 64 percent thereby yielding a syrup having a viscosity of about 225 at 40° F. Only one-half ounce of this mixture is sufficient to flavor 7 ounces of milk.

## EXAMPLE 4

## Vanilla Syrup

| Syrup Ingredients                      | Lbs.  |
|----------------------------------------|-------|
| Invert Syrup (76% solids)              | 35.00 |
| Malt Extract                           | 0.50  |
| Salt                                   | 0.05  |
| Emulsifier                             | 0.04  |
| Thickener (Carrageenin)                | 0.15  |
| Stabilizer (tetrasodium pyrophosphate) | 0.12  |
| Vanilla Flavor                         | 0.30  |
| Dye to give desired color.             |       |
| Water to make 100 lbs.                 |       |
| Specific gravity 1.15 to 40° F.        |       |
| Viscosity 35 cps. at 40° F.            |       |

By adding one-half percent of sodium alginate (LVA-10) to the above formulation, preferably together with 0.05 percent of phosphate stabilizer (sodium phosphate), there is obtained a composition having a viscosity of 100 cps. at 40° F. On being injected into milk in a ratio of 1:7, the composition yields a shake having a viscosity of about 100 cps. The sodium alginate can be used with or without the carrageenin.

## EXAMPLE 5

## Strawberry Syrup

| Syrup Ingredients                                                  | Lbs.  |
|--------------------------------------------------------------------|-------|
| Invert Syrup (76% solids)                                          | 45.00 |
| Emulsifier (Tween 80)                                              | 0.04  |
| Thickener (Carrageenin)                                            | 0.20  |
| Stabilizer (tetrasodium pyrophosphate or sodium hexametaphosphate) | 0.15  |
| Strawberry Extract                                                 | 5.00  |
| Citric Acid                                                        | 0.40  |
| Sodium phosphate                                                   | 0.20  |
| Dye to give desired color.                                         |       |
| Water to make 100 lbs.                                             |       |
| Specific gravity 1.20 at 40° F.                                    |       |
| Viscosity 50 cps. at 40° F.                                        |       |

If 0.5 pound of sodium alginate is included in the mixture, a syrup having a viscosity of 80 cps. is obtained which, on mixing with seven parts by volume of milk, will yield a strawberry shake of about 100 cps. viscosity (40° F.).

## 3EXAMPLE 6

## Lo-Cal Chocolate Syrup

| Syrup Ingredients | Lbs. |
|-------------------|------|
| Cocoa             | 5.00 |
| Salt              | 0.05 |

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|                                 |      |
|---------------------------------|------|
| Emulsifier (Tween 80)           | 0.04 |
| Vanilla Flavor                  | 0.13 |
| Preservative (sodium benzoate)  | 0.20 |
| Sodium cyclamate                | 1.70 |
| Thickeners (carrageenin)        | 0.35 |
| Stabilizers                     |      |
| sodium hexametaphosphate or     |      |
| tetrasodium pyrophosphate)      | 0.20 |
| Balance water to make 100 lbs.  |      |
| Specific gravity 1.08 at 40° F. |      |
| Viscosity 55 cps. at 40° F.     |      |

By including 0.5 pound of sodium alginate in the mixture, the viscosity rises to about 85 cps. (40° F.) while on mixing with seven parts by volume of milk, a shake having a viscosity of about 100 cps. (40° F.) is obtained.

## EXAMPLE 7

## Lo-Cal Vanilla Syrup

| Syrup Ingredients                      | Lbs. |
|----------------------------------------|------|
| Sodium cyclamate                       | 1.50 |
| Malt extract                           | 0.50 |
| Salt                                   | 0.05 |
| Emulsifier (Tween 80)                  | 0.04 |
| Vanilla Flavor                         | 0.30 |
| Preservative                           |      |
| (sodium benzoate or methyl             |      |
| paraben)                               | 0.20 |
| Thickener (carrageenin)                | 0.35 |
| Stabilizer (tetrasodium pyrophosphate) | 0.20 |
| Balance water to make 100 lbs.         |      |
| Specific gravity 1.06 at 40° F.        |      |
| viscosity 52 cps. at 40° F.            |      |

Upon addition of 0.5 pound of sodium alginate to the mixture, the viscosity is increased to about 80 cps., while on mixing with seven parts by volume of milk, the resulting viscosity is about 100 cps. (40° F.).

## EXAMPLE 8

## Lo-Cal Strawberry Syrup

| Syrup Ingredients                      | Lbs. |
|----------------------------------------|------|
| Sodium cyclamate                       | 1.60 |
| Emulsifier (Tween 80)                  | 0.04 |
| Strawberry Extract                     | 5.00 |
| Thickener (carrageenin)                | 0.30 |
| Stabilizer (tetrasodium pyrophosphate) | 0.15 |
| Preservative (sodium benzoate or       |      |
| methyl paraben)                        | 0.20 |
| Balance: water to make 100 lbs.        |      |
| Specific gravity 1.07 at 40° F.        |      |
| Viscosity 51 cps. at 40° F.            |      |

By the addition of 0.5 pound of sodium alginate, substantially the same increases in viscosity as in example 7 are obtained.

The following examples 8a to 17 inclusive and also 20 and 21 illustrate preferred embodiments of the invention employing in each case an amylase-treated cocoa of reduced viscosity in aqueous suspension:

## EXAMPLE 8a

## Chocolate Syrup

| Syrup Ingredients | Lbs. |
|-------------------|------|
|-------------------|------|

8

|                                 |       |
|---------------------------------|-------|
| Cocoa                           | 10.00 |
| Sugar                           | 52.00 |
| Salt                            | 0.29  |
| Vanilla                         | 0.20  |
| (Tween 80                       | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity at 70° F. is 220 cps. |       |

This syrup will produce a milk shake with 7 parts of milk. It requires neither sterilization nor refrigeration.

## EXAMPLE 9

## Chocolate Syrup

| Syrup Ingredients               | Lbs.  |
|---------------------------------|-------|
| Cocoa                           | 6.00  |
| Sugar                           | 60.00 |
| Salt                            | 0.29  |
| Vanilla                         | 0.20  |
| Tween 80                        | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity at 70° F. in 225 cps. |       |

This syrup will likewise yield a chocolate milk shake with seven parts of milk and needs no sterilization or refrigeration. The cocoa content can be raised to 9 or 10 if amylase-treated.

## EXAMPLE 10

## Chocolate Syrup

| Syrup Ingredients      | Lbs.  |
|------------------------|-------|
| Cocoa                  | 6.00  |
| Invert Sugar           | 75.00 |
| Salt                   | 0.29  |
| Vanilla                | 0.20  |
| Tween 80               | 0.04  |
| Water to make 100 lbs. |       |

This syrup has properties similar to those of examples 8 and 9.

## EXAMPLE 11

## Chocolate Syrup

| Syrup Ingredients                                | Lbs.  |
|--------------------------------------------------|-------|
| Cocoa                                            | 10.00 |
| Invert Sugar (76% Solids)                        | 30.00 |
| Sucrose                                          | 30.00 |
| Vanilla                                          | 0.20  |
| Salt                                             | 0.29  |
| Tween 80                                         | 0.04  |
| Water to make 100 lbs.                           |       |
| The viscosity of the syrup is 175 cps. at 70° F. |       |

## EXAMPLE 12

## Chocolate Syrup

| Syrup Ingredients         | Lbs.  |
|---------------------------|-------|
| Cocoa                     | 10.00 |
| Invert Sugar (76% solids) | 30.00 |
| Sucrose                   | 25.00 |
| Vanilla                   | 0.20  |

Salt  
Tween 80  
The viscosity is 91 cps. at 77° F. (25° C.)

0.29  
0.04

## EXAMPLE 13

## Chocolate Syrup

| Syrup Ingredients               | Lbs.  |
|---------------------------------|-------|
| Cocoa                           | 10.00 |
| Invert Sugar (76% solids)       | 30.00 |
| Sucrose                         | 35.00 |
| Vanilla                         | 0.20  |
| Salt                            | 0.29  |
| Tween 80                        | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity is 220 cps. At 70° F. |       |

## EXAMPLE 14

## Chocolate Syrup

| Syrup Ingredients              | Lbs.  |
|--------------------------------|-------|
| Cocoa                          | 10.00 |
| Invert Sugar (76% solids)      | 50.00 |
| Sucrose                        | 10.00 |
| Vanilla                        | 0.20  |
| Salt                           | 0.29  |
| Tween 80                       | 0.04  |
| Water to make 100 lbs.         |       |
| viscosity is 89 cps. at 70° F. |       |

## EXAMPLE 15

## Chocolate Syrup

| Syrup Ingredients               | Lbs.  |
|---------------------------------|-------|
| Cocoa                           | 10.00 |
| Invert Sugar (76% solids)       | 60.00 |
| Sucrose                         | 10.00 |
| Vanilla                         | 0.20  |
| Salt                            | 0.29  |
| Tween 80                        | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity at 70° F. is 239 cps. |       |

## EXAMPLE 16

## Chocolate-Malt Syrup

| Syrup Ingredients               | Lbs.  |
|---------------------------------|-------|
| Cocoa                           | 10.00 |
| Invert Sugar (76% solids)       | 35.00 |
| Malt (80% maltose)              | 25.00 |
| Sucrose                         | 5.00  |
| Vanilla                         | 0.15  |
| Salt                            | 0.22  |
| Tween                           | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity at 70° F. is 180 cps. |       |

## EXAMPLE 17

## Chocolate Syrup

| Syrup Ingredients               | Lbs.  |
|---------------------------------|-------|
| Cocoa                           | 7.00  |
| Sucrose                         | 35.00 |
| Invert Sugar (76% solids)       | 25.00 |
| Vanilla                         | 0.20  |
| Salt                            | 0.29  |
| between 80                      | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity at 70° F. is 230 cps. |       |

## EXAMPLE 18

## Vanilla Syrup

| Syrup Ingredients               | Lbs.  |
|---------------------------------|-------|
| Vanilla Flavor (extract)        | 0.30  |
| Sucrose                         | 35.00 |
| Invert Sugar (76% solids)       | 30.00 |
| Malt Extract                    | 0.50  |
| Salt                            | 0.05  |
| Tween 80                        | 0.04  |
| Water to make 100 lbs.          |       |
| Viscosity is 190 cps. at 70° F. |       |

## EXAMPLE 19

## Strawberry Syrup

| Syrup Ingredients            | Lbs.  |
|------------------------------|-------|
| Strawberry Extract           | 5.00  |
| Sucrose                      | 35.00 |
| Invert Sugar (76% solids)    | 30.00 |
| Citric Acid                  | 0.20  |
| Tween 80                     | 0.04  |
| Water to make 100 lbs.       |       |
| Viscosity is 185 cps. at 70° |       |

## EXAMPLE 20

## Chocolate Syrup

| Syrup Ingredients                                                                             | Lbs. |
|-----------------------------------------------------------------------------------------------|------|
| Cocoa                                                                                         | 9.00 |
| Dextrose                                                                                      | 23.8 |
| Sucrose                                                                                       | 30.0 |
| Salt                                                                                          | 0.29 |
| Vanilla                                                                                       | 0.20 |
| Tween 80                                                                                      | 0.04 |
| Water to make 100 lbs.                                                                        |      |
| Viscosity at 70° F. is 115 cps. The sugar content (sugar divided by sugar plus water) is 59%. |      |

EXAMPLE 21

Chocolate Syrup

| Syrup Ingredients                                       | lbs. |
|---------------------------------------------------------|------|
| Cocoa                                                   | 10.0 |
| Dextrose                                                | 22.8 |
| Sucrose                                                 | 30.0 |
| Salt                                                    | 0.29 |
| Vanilla                                                 | 0.20 |
| Tween 80                                                | 0.04 |
| Viscosity at 70° F. is 117 cps. Sugar content is 58.7%. |      |

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In examples 20 and 21, it appears that the dextrose produces a syrup of reduced viscosity compared with an equal weight of sucrose and even of invert sugar. Because of the lower degree of sweetness of dextrose as compared with sucrose and invert sugar, a lower amount of cocoa (amylase-treated) can be employed and the viscosity will then be low enough to permit the addition of about 3 to 10 percent, by weight of the whole mixture, of corn syrup, molasses and similar flavor-improving carbohydrate materials which have also a pleasing effect on the body of the syrup even though they do not contribute much to the self-sterilizing characteristic because of their low sugar content.

I claim:

1. A pressurized package containing a gaseous propellant and a flavored aqueous syrup capable of being dispensed at about 100 lb./sq.in. pressure through a standard aerosol nozzle having an orifice diameter of about 0.125 inch and in the

form of a jet of such high velocity that on being directed into a body of milk, the jet of syrup is substantially completely self-distributed throughout the body of milk, said syrup containing a component of substantially reduced viscosity and comprising an aqueous alkali metal alginate solution which constitutes about one-half to 1 percent by weight of the syrup, and which syrup on mixing with about seven parts by volume of milk yields a mixture having a viscosity of about 100 cps. at 40° F.

2. A chocolate-flavored syrup according to claim 1, said syrup containing about 7.25 percent cocoa, 1.97 percent non-fat milk powder, 0.20 percent vanilla powder, 0.29 percent salt, 1.74 percent cane sugar, 44.2 percent invert syrup (76 percent solids), and 0.4 percent of an edible emulsifier, said syrup having a viscosity of about 56 cps. at 40° F. and when injected into seven times its volume of milk, yielding a chocolate milk shake having a viscosity of about 15 cps. at 40° F.

3. A syrup according to claim 1, including about one-half percent to 1 percent by weight of a member of the group consisting of sodium and potassium alginates, said syrup upon injection into milk in the proportion of one part of syrup to seven of milk, by volume, yielding a chocolate milk shake of at least 100 cps. at 40° F.

4. A syrup as defined in claim 1, contained in an aerosol dispenser having a discharge nozzle with a discharge orifice of about 0.125 inch diameter, said syrup being under a gas pressure of about 100 lb. per sq. inch.

5. A syrup according to claim 1, wherein the sugar content is sufficiently high to render the syrup self-sterilizing and hence capable of storage. without refrigeration.

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