

SEALED PACK OF INGREDIENTS FOR AN INDIVIDUAL SMOOTHIE, AND ASSOCIATED METHODS AND APPARATUSES

Field of the Invention

5 The present invention relates to packaging of ingredients for preparing compositions and methods for preparing compositions using pre-packed ingredients.

Background

10 Five years ago, juice bars were the domain of grocers disposing of excess fruit, or health-food stores. However, juice bars have more recently become a significant part of the fast-food market and have begun to proliferate as franchises or independent enterprises. A key product of juice bars is the smoothie, which is a thick, smooth (in texture) drink generally comprising fruit pieces pureed or blended with ice-cream, sorbet or yoghurt and/or milk or juice. Non-fruit smoothies include alternative flavour ingredients to fruit such as chocolate, coffee, alcohol, etc. Other items may also be added
15 such as energy-boosting supplements, muesli, proteins, raw eggs, etc.

 Fig. 1 is a plan view of a layout of a conventional juice bar. Display counter 110 enables display of fresh fruit that is used in the preparation of smoothies and other juice bar products. A sink 120 is used to prepare the fresh fruit, which may be processed in the
20 juicers 130. A freezer 140 is used to store items such as ice, ice-cream and yoghurt. A chiller/dispenser 150 is used to refrigerate liquid ingredients of smoothies and/or other juice bar products. A row of blenders 160 are used to blend the ingredients of smoothies and/or other juice bar products, which are subsequently dispensed into cups for delivery to customers. The customers pay at the till 170. Used blending containers are cleaned for
25 reuse at the sink 180. Automatic dishwashing equipment may also be used, which may be installed under counter.

 A juice bar such as that shown in Fig. 1 is typically operated by three to six operators. Preparation of a smoothie typically entails the steps of retrieving a clean container for blending, obtaining appropriate quantities of ingredients such as fruit,
30 yoghurt and ice from respective storage areas in the juice bar, blending the smoothie, dispensing the smoothie into a cup and handing the smoothie to the respective customer. In preparing a smoothie, an operator is thus required to move around the juice bar. Although juice bars are generally laid out in accordance with workflow requirements, a substantial amount of movement by operators is unavoidable. This consumes time and

limits the number of operators that can simultaneously prepare products such as smoothies.

A need thus exists for improved methods of supplying and preparing compositions such as smoothies.

SUMMARY

In a first aspect of the invention, there is provided a method for storing ingredients for preparing an individual portion of a smoothie, said method comprising the steps of: placing a flavour ingredient into a pack; placing into said pack a frozen portion of liquid; placing into said pack at least one additional consistency ingredient; and subjecting said pack to a temperature sufficiently low to maintain a frozen state of at least certain of the ingredients in said pack; wherein the quantities of said ingredients in said pack are based on a target quantity of an individual smoothie portion.

In a second aspect of the invention, there is provided a sealed pack containing ingredients for preparing an individual portion of a smoothie, said pack comprising: a flavour ingredient; a frozen portion of liquid; and at least one additional consistency ingredient; wherein the quantities of said ingredients in said sealed pack are based on a target quantity of an individual smoothie portion.

In a third aspect of the invention, there is provided a method for preparing an individual portion of a smoothie, said method comprising the steps of: transferring contents of a sealed pack to a container; adding a portion of liquid to said container; and blending the contents of said container; wherein the contents of said sealed pack comprise a flavour ingredient, a frozen portion of liquid and at least one additional consistency ingredient; and wherein the quantities of the contents of said sealed pack are based on a target quantity of an individual smoothie portion.

In a fourth aspect of the invention, there is provided an apparatus for automatically vending individual smoothie portions, said apparatus comprising: first dispensing means for dispensing the contents of a sealed pack into a container; second dispensing means for dispensing a portion of liquid into said container; blending means for blending the contents of said container; and vending means for vending the contents of said container as an individual smoothie portion; wherein the contents of said sealed pack comprise a flavour ingredient, a frozen portion of liquid and at least one additional consistency ingredient; and wherein the quantities of the contents of said sealed pack are based on a target quantity of an individual smoothie portion.

Brief Description of the Drawings

A small number of embodiments are described hereinafter, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 is a plan view of a layout of a conventional juice bar;

Fig. 2 shows a flow diagram of a method for packaging ingredients for preparing a composition such as a smoothie;

Fig. 3 shows a pre-mix pack for preparing an individual portion of a composition such as a smoothie;

Fig. 4 shows a flow diagram of a method for storing ingredients for preparing an individual portion of a smoothie;

Fig. 5 shows a sealed pack of ingredients for preparing an individual portion of a smoothie; and

Fig. 6 shows a flow diagram of a method for preparing an individual portion of a smoothie.

Detailed Description

Embodiments of methods and packaging for preparing compositions are described hereinafter. Although the embodiments are particularly described with reference to smoothies, it is not intended that the present invention be restricted in this way. Specifically, the present invention has application to other types of compositions and particularly to other compositions for human consumption, such as soups.

Use of the term 'smoothie' in the present document is intended to include fruit-based smoothies and non-fruit-based smoothies, which may include flavour ingredients such as coffee, chocolate and alcohol. Furthermore, smoothies may be dairy-based or non-dairy-based.

Use of the term 'unfrozen' in the present document is intended to mean 'not completely frozen' and to include 'partially frozen', 'slushy' and 'icy' within the scope of the intended meaning. Use of the term 'partially frozen' in the present document is intended to mean 'not completely frozen' and to include 'slushy' and 'icy' within the scope of the intended meaning.

Use of the phrase 'an individual portion', in the present document is intended to mean a portion suitable for consumption by one person or individual. However, such portions may vary in size or volume to cater for different individuals (e.g., adults and children or small, medium and large).

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Fig. 2 shows a flow diagram of a method for packaging ingredients for preparing a composition such as a smoothie. At step 210, at least one ingredient for the composition is stored in a first container. At step 220, remaining ingredients for preparing the composition are stored in a second container. One or more of the remaining ingredients in the second container may be frozen at step 230. In some cases, already frozen ingredients are stored in the second container and step 230 may serve to maintain such in a frozen state.

For making a smoothie, the contents of the first container comprise a liquid base such as apple juice concentrate or mango nectar, which is maintained in an unfrozen state. Prevention of freezing of the liquid base advantageously yields an improved texture of the prepared smoothie in comparison to use of a frozen base. If two smoothies with identical

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ingredients, apart from the one smoothie's juice base being liquid and the other smoothie's juice base being frozen, are blended in identical blenders, the smoothie with the liquid base will have a smoother or more liquid texture than the smoothie with the frozen base. The contents of the second container comprise the remaining ingredients for preparing the smoothie such as frozen yoghurt, individually quick frozen (IQF) fruit and ice flakes. The IQF fruit may, for example, comprise whole strawberries, raspberries, boysenberries and mango chunks.

In one embodiment, the first and second containers comprise separate compartments of a single package containing ingredients for preparing a single portion of a smoothie. In this instance, the entire package is subjected to a sufficiently low temperature to ensure that the contents of the second compartment are frozen. However, the liquid contents of the first compartment are prevented from freezing. One method used to prevent freezing is the addition of an 'anti-freeze' additive to the liquid base content. Another method of preventing freezing is use of a thermally insulating material for the first compartment. The methods may be employed separately or in combination.

In an alternative embodiment, the first and second containers comprise separate packs. Accordingly, a number of first containers may be packed in a larger container (for example, plastic bottles in a cardboard box or plastic crate) for ease of handling and delivery to juice bars. A number of the second containers may similarly be consolidated in a larger container, with the larger container being subjected to sufficiently low temperatures to freeze the contents of the number of second containers.

Three examples of ingredient lists for fruit smoothies that may be packaged and/or prepared according to the methods described herein are provided hereinafter:

MIXED BERRY FRUIT SMOOTHIE

1. Apple juice concentrate (liquid form): 200ml
2. Strawberry-flavoured frozen yoghurt: 180ml
3. Strawberries (IQF): 2 whole berries @ 11g each = 22g
4. Raspberries (IQF): 2 whole berries @ 2g each = 4g

5. Ice flakes: 0.75 cup

MANGO FRUIT SMOOTHIE

1. Mango nectar (liquid form): 150ml
- 5 2. Mango pieces (frozen): 3 pieces @ 6g each = 18g
3. Mango-flavoured frozen yoghurt: 180ml
4. Ice flakes: 0.75 cup

TROPICAL FRUIT SMOOTHIE

- 10 1. Tropical juice (liquid form): 200ml
2. Mango-flavoured frozen yoghurt: 180ml
3. Mango pieces (frozen): 1 piece @ 6g each = 6g
4. Strawberries (IQF): 1 whole berry @ 11g each = 11g
5. Raspberries (IQF): 2 whole berries @ 2g each = 4g
- 15 6. Ice flakes: 0.5 cup

Individually frozen fruit avoids the need for pre-blended fruit mix, which contributes to the texture and freshness of the smoothies.

20 Fig. 3 shows a pre-mix pack for preparing an individual smoothie. The pack 310 comprises two separate compartments 320 and 330 for storing frozen and non-frozen ingredients, respectively. The pre-mix pack may be constructed from flexible plastic material. Thermal insulation may be provided by a metallic deposition on the plastic material.

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Fig. 4 shows a flow diagram of a method for storing ingredients for preparing an individual portion of a smoothie. At step 410, a flavour ingredient is placed in a pack. The flavour ingredient may, for example, comprise fruit, chocolate, coffee, alcohol, etc. For the case of fruit, individually frozen pieces of fruit may be used for ease of preparing the
30 pack and/or to assist later blending of the contents of the pack. However, a portion of fruit in another form such as purée may alternatively be used. Fresh fruit may also be used, although this would disadvantageously have a relatively shorter lifespan. At step 420, a

frozen portion of liquid is placed in the pack. The frozen liquid portion may, for example, comprise multiple, small, individually frozen portions of water (ice), fruit juice, milk, tea and/or coffee. This contributes to improved consistency and texture of the smoothie and assists in preventing damage to or reducing wear of the blender while blending the contents of the pack. In certain embodiments, the frozen liquid portion comprises multiple hollow frozen portions (e.g., hollow ice cubes). If not hollow, it is preferable that the frozen liquid portions are of a smaller size to assist in preventing damage to the blender. At step 430, at least one additional consistency ingredient is placed in the pack. The at least one additional consistency ingredient contributes to the texture or runniness of the smoothie and may, for example, comprise ice-cream, sorbet and/or yoghurt. The quantities of the ingredients in the sealed pack are determined based on a target quantity of an individual smoothie portion. The pack is subjected to a temperature that is sufficiently low to maintain the frozen state of at least certain of the contents of the pack, at step 440. Other ingredients such as energy-boosting supplements, muesli, proteins, raw eggs, etc., may also be added to the smoothie.

Fig. 5 shows a sealed pack of ingredients for preparing an individual portion of a smoothie. The sealed pack 510 comprises portions of fruit 512, frozen portions of liquid 514 and at least one additional consistency ingredient 516. Individually frozen pieces of fruit may be used to assist later blending of the contents of the pack. However, a portion of fruit in another form such as purée may alternatively be used. Fresh fruit may also be used, although this would disadvantageously have a relatively shorter lifespan. Other flavour ingredients such as coffee, chocolate, alcohol, etc. may alternatively be used in place of fruit. The frozen liquid portions 514 preferably comprise multiple, small, individually frozen portions of water (ice), fruit juice, milk, tea and/or coffee. This contributes to improved consistency and texture of the smoothie and assists in preventing damage while blending the contents of the pack. In certain embodiments, the multiple frozen liquid portions 514 are hollow (e.g., hollow ice cubes). If not hollow, it is preferable that the frozen liquid portions 514 are of a smaller size to assist in preventing damage to or reducing wear of the blender. The at least one additional consistency ingredient 516 contributes to the texture or runniness of the smoothie and may, for example, comprise ice-cream, sorbet and/or yoghurt. The quantities of the ingredients in

the sealed pack are typically determined based on a target quantity of an individual smoothie portion. The pack 510 typically comprises a sealable or re-sealable disposable container such as a plastic bag or a plastic cup. Other ingredients such as energy-boosting supplements, muesli, proteins, raw eggs, etc., may also be added to the smoothie.

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Fig. 6 shows a flow diagram of a method for preparing an individual portion of a smoothie. At step 610, the contents of a sealed pack are transferred to a container for blending. Contents of the pack comprise a flavour ingredient, a frozen portion of liquid and at least one additional consistency ingredient, which contributes to the texture or
10 runniness of the smoothie and may, for example, comprise ice-cream, sorbet and/or yoghurt. The flavour ingredient may comprise a portion of fruit in the case of a fruit smoothie. The frozen liquid portions preferably comprise multiple, small, individually frozen portions of water (ice), fruit juice, milk, coffee and/or tea. This contributes to improved consistency and texture of the smoothie and assists in preventing damage while
15 blending the contents of the pack. In certain embodiments, the multiple frozen liquid portions are hollow (e.g., hollow ice cubes). If not hollow, it is preferable that the frozen liquid portions are of a smaller size to assist in preventing damage to or reducing wear of the blender. Individually frozen pieces of fruit are preferably used to assist later blending of the contents of the pack. However, a portion of fruit in another form such as purée may
20 alternatively be used. Fresh fruit may also be used, although this would disadvantageously have a relatively shorter [useful] lifespan. The quantities of the contents in the sealed pack are typically determined based on a target quantity of an individual smoothie portion. A portion of liquid is added to the container at step 620 and the contents of the container are blended at step 630. Presence of liquid is necessary for
25 the blending process. The liquid may, for example, comprise water, fruit juice, milk, tea and/or coffee. Other ingredients such as energy-boosting supplements, muesli, proteins, raw eggs, etc., may also be added to the smoothie.

In certain embodiments, a vending machine is used to blend and vend single portions of smoothies, as described hereinbefore. Certain or all of the ingredients may be
30 stored or pre-packed in individual portions or serves in the vending machine as described hereinbefore. Alternatively, certain or all of the ingredients may be stored in bulk in the vending machine and be dispensed in appropriate quantities for preparing single smoothie

portions. For example, a vending machine may store packs such as those described in relation to and shown in Fig. 5 for blending with an amount of liquid dispensed from a bulk tank, which may be located internally or externally to the vending machine. The liquid may, for example, comprise water, fruit juice, milk, tea and/or coffee. Other ingredients such as energy-boosting supplements, muesli, proteins, raw eggs, etc., may also be added to the smoothies. The vending machine thus provides automatic blending and dispensing of individual smoothie portions.

Methods and packaging for smoothies and other compositions have been described hereinbefore. Such methods and packaging are advantageous in that they can ensure exact portioning and thus provide improved consistency and quality control at the point of manufacture and sale. Pre-packed ingredients for producing individual smoothie portions are designed to suitably fill standard cup sizes used by a juice bar or vendor and wastage can thus be reduced or eliminated. Packaging of individual smoothie portions also advantageously results in less labour and real estate being required at the point of manufacture and sale. This translates to less staff and smaller juice bars and, consequently, lower operating costs. Moreover, purchase of all or most of the ingredients in a single package will likely result in savings throughout the entire supply chain. Packaging of individual smoothie portions also advantageously enables quicker preparation of smoothies, thus permitting increased productivity and increased customer satisfaction.

The foregoing detailed description provides exemplary embodiments only, and is not intended to limit the scope, applicability or configurations of the invention. Rather, the description of the exemplary embodiments provides those skilled in the art with enabling descriptions for implementing an embodiment of the invention. Various changes may be made in the function and arrangement of elements without departing from the spirit and scope of the invention as set forth in the claims hereinafter.

Where specific features, elements and steps referred to herein have known equivalents in the art to which the invention relates, such known equivalents are deemed to be incorporated herein as if individually set forth. Furthermore, features, elements and

steps referred to in respect of particular embodiments may optionally form part of any of the other embodiments unless stated to the contrary.

Embodiments of the invention have application beyond juice bars. For example,
5 methods and packaging for preparing compositions described hereinbefore may be used in various retail outlets such as supermarkets, various food providers such as restaurants, cafes, and coffee shops and private homes.

In the context of this specification, the word "comprising" means "including
10 principally but not necessarily solely" or "having" or "including", and not "consisting only of". Variations of the word "comprising", such as "comprise" and "comprises" have correspondingly varied meanings.

CLAIMS:

1. A method for storing ingredients for preparing an individual portion of a smoothie, said method comprising the steps of:
 - placing a flavour ingredient into a pack;
 - placing into said pack a frozen portion of liquid;
 - placing into said pack at least one additional consistency ingredient; and
 - subjecting said pack to a temperature sufficiently low to maintain a frozen state of at least certain of the ingredients in said pack;wherein the quantities of said ingredients in said pack are based on a target quantity of an individual smoothie portion.
2. A method according to claim 1, wherein said frozen portion of liquid comprises a plurality of frozen portions of at least one liquid selected from the group of liquids consisting of water, fruit juice, milk, coffee and tea.
3. A method according to claim 1, wherein said frozen portion of liquid comprises a plurality of hollow frozen portions of liquid.
4. A method according to claim 1, wherein said flavour ingredient comprises a portion of fruit.
5. A method according to claim 4, wherein said portion of fruit comprises a plurality of individually frozen pieces of fruit.
6. A method according to claim 1, wherein said at least one additional consistency ingredient is selected from the group of ingredients consisting of ice-cream, sorbet and yoghurt.
7. A sealed pack containing ingredients for preparing an individual portion of a smoothie, said pack comprising:
 - a flavour ingredient;

a frozen portion of liquid; and

at least one additional consistency ingredient;

wherein the quantities of said ingredients in said sealed pack are based on a target quantity of an individual smoothie portion.

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8. A sealed pack according to claim 7, wherein said frozen portion of liquid comprises a plurality of frozen portions of at least one liquid selected from the group of liquids consisting of water, fruit juice, milk, coffee and tea.

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9. A sealed pack according to claim 7, wherein said frozen portion of liquid comprises a plurality of hollow frozen portions of liquid.

10. A sealed pack according to claim 7, wherein said flavour ingredient comprises a portion of fruit.

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11. A sealed pack according to claim 10, wherein said portion of fruit comprises a plurality of individually frozen pieces of fruit.

12. A sealed pack according to claim 7, wherein said sealed pack comprises a disposable container selected from the group of containers consisting of a plastic bag and a plastic cup.

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13. A sealed pack according to claim 7, wherein said at least one additional consistency ingredient is selected from the group of ingredients consisting of ice-cream, sorbet and yoghurt.

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14. A method for preparing an individual portion of a smoothie, said method comprising the steps of:

transferring contents of a sealed pack to a container;

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adding a portion of liquid to said container; and

blending the contents of said container;

wherein the contents of said sealed pack comprise a flavour ingredient, a frozen portion of liquid and at least one additional consistency ingredient; and

wherein the quantities of the contents of said sealed pack are based on a target quantity of an individual smoothie portion.

15. A method according to claim 14, wherein said frozen portion of liquid comprises a plurality of frozen portions of at least one liquid selected from the group of liquids consisting of water, fruit juice, milk, coffee and tea.

16. A method according to claim 14, wherein said frozen portion of liquid comprises a plurality of hollow frozen portions of liquid.

17. A method according to claim 14, wherein said added portion of liquid comprises at least one liquid selected from the group of liquids consisting of water, fruit juice, milk, coffee and tea.

18. A method according to claim 14, wherein said at least one additional consistency ingredient is selected from the group of ingredients consisting of ice-cream, sorbet and yoghurt.

19. A method according to claim 14, wherein said flavour ingredient comprises a portion of fruit.

20. A method according to claim 19, wherein said portion of fruit comprises a plurality of individually frozen pieces of fruit.

21. An apparatus for automatically vending individual smoothie portions, said apparatus comprising:

first dispensing means for dispensing the contents of a sealed pack into a container;

second dispensing means for dispensing a portion of liquid into said container;

blending means for blending the contents of said container; and

vending means for vending the contents of said container as an individual smoothie portion;

wherein the contents of said sealed pack comprise a flavour ingredient, a frozen portion of liquid and at least one additional consistency ingredient; and

5 wherein the quantities of the contents of said sealed pack are based on a target quantity of an individual smoothie portion.

22. An apparatus according to claim 21, wherein said at least one additional consistency ingredient is selected from the group of ingredients consisting of ice-cream,
10 sorbet and yoghurt.

23. An apparatus according to claim 21, wherein said flavour ingredient comprises a portion of fruit.