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(54) IMPROVED SUGARLESS NON-TACK CHEWING GUM
VERBESSERTER ZUCKERFREIER, NICHTKLEBENDER Kaugummi
GOMME A MACHER SANS SUCRE AMELIOREE A CARACTERE NON COLLANT

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(56) References cited:
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The present invention relates to a sugarless non-tack chewing gum with improved textural and chewing properties.

BACKGROUND OF THE INVENTION

U.S. Patent 3,984,574, issued to Comollo, discloses an abhesive (non-tack) gum base in which the non-tack properties were achieved by eliminating conventional gum base ingredients found to contribute to chewing gum tackiness, and substituting non-tacky ingredients in their place. Specifically, it was discovered that some elastomers, resins and waxes contribute to chewing gum tackiness.

Comollo eliminated natural and some synthetic elastomers from gum base, and substituted non-tacky synthetic elastomers such as polyisobutylene, polyisoprene, isobutylene-isoprene copolymer and styrene-butadiene copolymer. Comollo also eliminated tack-producing natural resins and modified natural resins, and replaced them with higher amounts of hydrogenated or partially hydrogenated vegetable oils or animal fats. Also, Comollo excluded waxes from the gum base, but included polyvinyl acetate, fatty acids and mono and diglycerides of fatty acids.

Other efforts to develop tack-free gum bases and chewing gums are also known in the art. For example, U.S. Patent 4,415,593, issued to Glass et al., discloses a non-stick chewing gum in which the gum base includes polyisoprene obtained from a naturally occurring guayule rubber. U.S. Patent 4,387,108, issued to Koch et al., discloses a reduced tack gum base containing an elastomer, lecithin or lecithin derivatives, glycerol ester of partially hydrogenated wood resin, a mineral adjuvant, a non-toxic vinyl polymer, and an oleaginous plasticizer. U.S. Patent 5,087,459, issued to Chuu et al., discloses a non-tack chewing gum whose gum base includes a terpene resin, high melting wax, low melting wax, elastomer, polyvinyl acetate, emulsifier, filler, and gum base solvent. Other non-tack gum bases and gums are also known.

A problem with many non-tack chewing gums is that the gum base ingredients which caused product tackiness also provided cohesive forces which held the gum base and chewing gum together. Thus, when tackiness is eliminated by removing certain ingredients or combinations of ingredients, the resulting chewing gum base would often break apart into distinct loaves or chunks which would not mix and disperse properly during manufacture of the chewing gum. The resulting chewing gum product would often exhibit short texture, meaning that it was easy to break, separate or crumble. In the case of sugarless non-tack gums, some of the non-tack gum bases produced undesirable sensory qualities such as a burning flavor. Therefore, there is a need or desire in the chewing gum industry for a non-tack gum base and chewing gum which exhibit ample cohesive bonding between the ingredients notwithstanding the absence of tackiness to external surfaces such as teeth and dentures, and which have improved sensory qualities.

WO 93/17,573 discloses a substantially wax-free chewing gum in which the gum base may contain a terpene resin to cause the gum base to be less tacky. It may also contain a sugarless sweetener, an example of which is a mixture of glycerin and HSH syrup which is coevaporated.


US-A-4,582,707 discloses that the affinity of chewing gum made with HSH, alone or with glycerin, to become sticky is ameliorated by the addition of carboxymethyl cellulose.

SUMMARY OF THE INVENTION

The present invention is directed to a non-tack sugarless chewing gum in which the ingredients exhibit excellent cohesive strength between each other without causing the gum to stick to external surfaces such as teeth and dentures. The chewing gum of the invention does not exhibit short texture and does not easily break, rupture or separate during processing and handling. The chewing gum also has good sensory qualities.

The present invention provides a sugarless, non-tack chewing gum, comprising:

- from 5 to 95% by weight non-tack chewing gum base which is substantially free of terpene resins;
- from 5 to 95% by weight sugarless sweetener;
- from 0.1 to 15% by weight flavoring agent; and
- from 1 to 15% by weight of a syrup blend including glycerin, hydrogenated starch hydrolysates (HSH) and water.

The present invention also provides a method of making sugarless, non-tack chewing gum as defined above, comprising the steps of:
preparing a non-tack chewing gum base, which is substantially free of terpene resins;
adding, to the chewing gum base, a sugarless bulk sweetener;
adding, to the chewing gum base, a flavoring agent;
adding, to the chewing gum base, a syrup blend including glycerin, HSH and water; and
mixing the ingredient together to form a homogeneous chewing gum product.

[0012] An essential ingredient in the non-tack sugarless chewing gum of the invention is a syrup blend including glycerin, hydrogenated starch hydrolysates (HSH) and some remaining water. Thus syrup blend is preferably coevaporated with mixing glycerin with a commercially available mixture of water and HSH to form a three-component blend, and then evaporating most of the water from the blend. The coevaporated blend is in the form of a syrup prior to addition into the chewing gum. It has been discovered that this syrup blend serves as an excellent binder between non-tack chewing gum ingredients, including the gum base ingredients, without causing adhesion to teeth or dentures. The syrup blend may be added after manufacture of the gum base, and during manufacture of the final chewing gum product. The syrup blend constitutes 1 to 15% by weight of the chewing gum.

[0013] The non-tack gum base may be any known gum base which could stand to benefit from improved binding between its ingredients. Non-tack bases which do not contain terpene resin (a known binder) stand to benefit from the inclusion of the syrup blend in the chewing gum. Such non-tack gum base include, but are not limited to, the gum bases described in the above-identified patent to Comollo. Conventional Comollo-type bases include 5-35% by weight of an elastomer selected from polyisobutylene, polyisoprene, isobutylene-isoprene copolymer, styrene-butadiene copolymer, and mixtures thereof. Conventional Comollo-type bases also include 5-50% by weight hydrogenated vegetable oils and/or animal fats; 5-40% by weight mineral adjuvants (also known as fillers); 0-55% by weight polyvinyl acetate; 0-20% by weight fatty acids; and 0-10% by weight monoglycerides and/or diglycerides of fatty acids.

[0014] As explained above, the syrup blend is added during manufacture of the chewing gum. Except for the addition of the syrup blend, the underlying chewing gum composition may be any non-tack chewing gum which could stand to benefit from improved binding between its ingredients. Generally, such chewing gums would include any gum having a non-tack gum base which could stand to benefit from improved binding. Often, the cohesiveness of a conventional chewing gum product, or lack thereof, has been dependent upon the cohesiveness of the gum base used in the chewing gum, or lack thereof.

[0015] With the foregoing in mind, it is a feature and advantage of the invention to provide a sugarless non-tack chewing gum having excellent cohesive properties.

[0016] It is also a feature and advantage of the invention to provide a non-tack sugarless chewing gum having excellent cohesive properties which contains a typically less cohesive non-tack base.

[0017] It is also a feature and advantage of the invention to provide a method of making a cohesive non-tack sugarless chewing gum using a relatively non-cohesive non-tack chewing gum base.

[0018] The foregoing and other features and advantages of the invention will become further apparent from the following detailed description of the presently preferred embodiments, read in conjunction with the accompanying examples.

DETAILED DESCRIPTION OF THE
PRESENTLY PREFERRED EMBODIMENTS

[0019] In accordance with the invention, a syrup blend including coevaporated glycerin, HSH and some water is added during manufacture of a non-tack gum base, or during manufacture of a non-tack chewing gum, or both. The glycerin in the syrup blend is present at 15-30% by weight of the syrup blend, preferably 22-28% by weight of the syrup blend, most preferably about 25% by weight of the syrup blend. The HSH solids are present at 65-72% by weight of the syrup blend, preferably 67-70% by weight of the syrup blend, most preferably about 67.5% by weight of the syrup blend. The water is present at 5-10% by weight of the syrup blend, preferably 6.5-8.5% by weight of the syrup blend, most preferably about 7.5% by weight of the syrup blend.

[0020] The syrup blend can be prepared using a commercially available aqueous HSH solution which initially contains 70-75% by weight HSH solids and 25-30% by weight water. One suitable aqueous HSH solution is Lycasin brand HSH available from Roquette Corp., located in Gurnee, Illinois.

[0021] The aqueous HSH solution can be blended with glycerin using whatever ratio is needed to achieve the desired composition of the syrup after evaporation of some of the water. Generally 75-80% by weight aqueous HSH solution is mixed with 20-25% by weight glycerin. Preferably, 78.3% by weight aqueous HSH solution is mixed with 21.7% by weight glycerin. Any suitable mixer can be used.

[0022] Once the aqueous HSH and glycerin have been blended, the blend can be coevaporated to remove most of the water, resulting in a syrup blend having the desired water content. This coevaporation can be accomplished with
or without vacuum, and by heating the blend. Preferably, the blend is heated under a vacuum of at least 3-3 kPa (25mm Hg), at a temperature of 54 to 91°C (130 to 195°F). Preferably, the coevaporation will occur along an isobar in which the partial vapor pressure of the water in the blend at least equals the pressure of the atmosphere above the blend. By performing the coevaporation at or near boiling conditions for the water, the speed of the evaporation can be optimized.

[0023] The non-tack gum base is a conventional non-tack gum base which does not contain a terpene resin. The reason for this is that terpene resins already provide some cohesion to a gum base, and the benefits of adding the syrup blend are less pronounced when a terpene resin is already present, the gum base will be a non-tack base including the following ingredients:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>% By Weight Of Gum Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthetic Elastomer</td>
<td>5-35</td>
</tr>
<tr>
<td>Hydrogenated and/or Partially Hydrogenated Vegetable Oil and/or Animal Fats</td>
<td>5-50</td>
</tr>
<tr>
<td>Fillers</td>
<td>5-40</td>
</tr>
<tr>
<td>Polyvinyl Acetate</td>
<td>0-55</td>
</tr>
<tr>
<td>Fatty Acids</td>
<td>0-20</td>
</tr>
<tr>
<td>Monoglycerides and/or Diglycerides of Fatty Acids</td>
<td>0-10</td>
</tr>
</tbody>
</table>

[0024] The synthetic elastomer should be an elastomer which does not contribute significant tackiness to the gum base and sugarless chewing gum. Preferably, the synthetic elastomer includes one or more of polyisobutylene, polyisoprene, isobutylene-isoprene copolymer; and styrene-butadiene copolymer.

[0025] A wide variety of hydrogenated and/or partially hydrogenated vegetable oils and/or animal fats may be utilized as gum base softeners. Examples of suitable vegetable oils include hydrogenated and partially hydrogenated soybean oil, cottonseed oil, corn oil, peanut oil, and palm oil. Examples of suitable animal fats include tallow and lard.

[0026] A variety of fillers may also be used in the non-tack gum base. Preferred fillers include calcium carbonate, magnesium carbonate, talc, tricalcium phosphate, or mixtures thereof.

[0027] Polyvinyl acetate may be included in the non-tack gum base. When included, the polyvinyl acetate preferably has a weight average molecular weight of at least 2000.

[0028] Fatty acids, monoglycerides of fatty acids, and/or diglycerides of fatty acids may also be included in the base. Suitable fatty acids include stearic, palmitic, oleic, linoleic and linolenic acids, mono and diglycerides of these acids, and mixtures thereof.

[0029] The non-tack gum base does not include natural gums combined with natural resins and rosin derivatives, and with resins or waxes of petroleum origin; natural gums combined with natural or synthetic rubbers, rosins derivatives, polyvinyl acetate, and polyterpenes; natural gums combined with natural or synthetic rubbers and waxes of petroleum or natural origin; or natural or synthetic rubbers combined with waxes and resins. The foregoing combinations of ingredients are known to impart unwanted tack to the gum base and chewing gum.

[0030] The non-tack gum base can be made using any known process for making gum base. For instance, the gum base ingredients may be added and mixed using a conventional batch mixing process, such as a sigma blade mixer. The gum base can also be prepared using a continuous mixer, for example, a twin screw extruder, single screw extruder, paddle mixer or blade-and-pin mixer. Various techniques for preparing gum base are known, and do not constitute part of the invention.

[0031] The non-tack gum base constitutes 5-95% by weight of the non-tack chewing gum, preferably 10-50% by weight of the chewing gum, most preferably 20-30% by weight of the chewing gum. In addition to the gum base, which is generally water-insoluble, the non-tack chewing gum includes a water-soluble bulk portion and one or more flavoring agents. The water-soluble portion dissipates over a period of time during chewing. The gum base remains in the mouth throughout the chewing process.

[0032] The syrup blend is present in the chewing gum product at a level of 1-15% by weight, preferably 3-15% by weight, most preferably 5-10% by weight. The water soluble portion of the chewing gum may further include chewing gum softeners, bulk sugarless sweeteners, high intensity sweeteners, flavoring agents and combinations thereof, in addition to the syrup blend of glycerin, HSH and water. Depending on the amount of the syrup blend in the gum, a softener may be added in order to balance the texture, i.e., to optimize the chewability and mouth feel of the gum. When used, softeners, which are also known as plasticizers or plasticizing agents, generally constitute between 0.5-15% by weight of the chewing gum. Conventional softeners include additional glycerin, lecithin, and combinations thereof. However, it is preferred that a softener, if used, does not also act as an emulsifier because emulsification may disrupt the cohesiveness of the texture by causing dissolution of the syrupy blend. For this reason, a medium chain triglyceride is preferred over lecithin. A suitable medium chain triglyceride is generically known as captrin.
Bulk sugarless sweeteners constitute 5-95% by weight of the chewing gum, more typically 20-80% by weight of the chewing gum and most commonly 30-60% by weight of the chewing gum. Sugarless sweeteners are components with sweetening characteristics which are devoid of the commonly known sugars. Sugarless sweeteners include but are not limited to sugar alcohols such as sorbitol, mannitol, xylitol, hydrogenated starch hydrolysates, maltitol, and the like, alone or in combination.

High intensity sweeteners may also be present and are commonly used with the sugarless sweeteners. When used, high intensity sweeteners typically constitute 0.001-5% by weight of the chewing gum, preferably 0.01-1% by weight of the chewing gum. Typically, high intensity sweeteners are at least 20 times sweeter than sucrose. These may include but are not limited to sucralose, aspartame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizin, dihydrochalcones, thaumatin, monellin, and the like, alone or in combination.

The sweetener may also function in the chewing gum in whole or in part as a water soluble bulking agent. Additionally, the softener may provide additional sweetness such as with aqueous sugar or alditol solutions.

Flavor is present in the chewing gum in an amount within the range of 0.1-15% by weight of the chewing gum, preferably 0.2-5% by weight of the chewing gum, most preferably 0.5-3% by weight of the chewing gum. Flavoring agents may include essential oils, synthetic flavors or mixtures thereof including but not limited to oils derived from plants and fruits such as citrus oils, fruit essences, peppermint oil, spearmint oil, other mint oils, clove oil, oil of wintergreen, anise and the like. Artificial flavoring agents and components may also be used in the flavor ingredient of the invention. Natural and artificial flavoring agents may be combined in any sensorially acceptable fashion.

Optional ingredients such as colors, emulsifiers, pharmaceutical agents and additional flavoring agents may also be included in chewing gum.

The non-tack chewing gum can be manufactured by sequentially adding the various chewing gum ingredients to any commercially available batch or continuous mixer known in the art. After the ingredients have been thoroughly mixed, the gum is discharged from the mixer and shaped into the desired form such as by rolling into sheets, scoring and cutting into sticks. Generally, the ingredients are mixed by first melting the gum base and adding it to the running mixer. The gum base may alternatively be melted or prepared in the mixer. Color can be added at this time.

The syrup blend of glycerin, HSH and water can be added next along with part of the bulk portion and a softener, if any. Further parts of the bulk portion can then be added. Flavoring agents are typically added with the final part of the bulk portion. The average mixing time typically takes from 5-15 minutes, although longer mixing times are sometimes required. Those skilled in the art will recognize that variations of this mixing procedure, or other mixing procedures, may be followed.

A wide range of changes and modifications to the embodiments of the invention described about will be apparent to persons skilled in the art. The following examples are not to be construed as imposing limitations on the invention, but are included merely to illustrate preferred embodiments.

**EXAMPLE 1**

The following is an example of a typical non-tack, non-terpene containing gum base useful in the non-tack chewing gums of the invention. This base was prepared using a conventional gum base manufacturing process.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>% By Weight In Gum Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Rubber (SBR)</td>
<td>9.956</td>
</tr>
<tr>
<td>Fats and Oils</td>
<td>39.028</td>
</tr>
<tr>
<td>Antioxidant (BHT)</td>
<td>0.04</td>
</tr>
<tr>
<td>Polyvinyl Acetate</td>
<td>21.771</td>
</tr>
<tr>
<td>Calcium Carbonate</td>
<td>13.275</td>
</tr>
<tr>
<td>Polysobutylene</td>
<td>15.93</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**EXAMPLES 2-5**

The following chewing gum samples were prepared for testing. The gum of Example 2 included some of a polyterpene-containing gum base and did not include the syrup blend of glycerin, HSH and water. The gum of Example 3 included only the non-terpene containing gum base of Example 1, and did not include the syrup blend. The gums of Examples 4-5 included the non-tack base of Example 1, and also included 6.8% by weight of a syrup blend of 25% glycerin, 67.5% HSH solids, and 7.5% water.
The gum sample of Example 2 had adequate cohesion due to the presence of polyterpene-containing gum base. However, the gum sample of Example 3, which included the non-tack, non-terpene containing base of Example 1, and no other base, had a firm and crumbly texture and a burning quality in its flavor.

The gum sample of Example 4, which included the gum base of Example 1 and the syrup blend of glycerin, HSH and water, had substantially improved cohesion compared to the gum sample of Example 3, was softer, and also had improved flavor without the burning quality. Finally, the gum sample of Example 5, in which captrin was added in place of lecithin, had even better cohesion and texture than the gum sample of Example 4.

It should be appreciated that the method of the present invention is capable of being incorporated in the form of a variety of embodiments, only a few of which have been illustrated and described above. It will be appreciated that the addition of certain other ingredients, process steps, materials or components not specifically included will have an adverse impact on the present invention. The best mode of the invention may therefore exclude ingredients, process steps, materials or components other than those listed above for inclusion or use in the invention.

Claims

1. A sugarless, non-tack chewing gum, comprising:

   (i) from 5 to 95% by weight non-tack chewing gum base,
   (ii) from 5 to 95% by weight sugarless sweetener;
   (iii) from 0.1 to 15% by weight flavouring agent; and
   (iv) from 1 to 15% by weight of a syrup blend including glycerin, hydrogenated starch hydrolysates (HSH) and water,

   wherein the non-tack chewing gum base

   (i) is substantially free of terpene resins,
   (ii) includes 5 to 35% synthetic elastomer, 5 to 50% of a gum base softener selected from the group consisting of hydrogenated vegetable oils, partially hydrogenated vegetable oils, animal fats, and combinations thereof, 5 to 40% filler, 0 to 55% polyvinyl acetate, 0 to 20% fatty acids, and 0 to 10% monoglycerides and diglycerides of fatty acids, by weight of the gum base, and
   (iii) does not include natural gums combined with natural resins and rosin derivatives, and with resins or waxes of petroleum origin; natural gums combined with natural or synthetic rubbers, rosin derivatives, polyvinyl acetate, and polyterpenes; natural gums combined with natural or synthetic rubbers and waxes of petroleum or natural origin; or natural or synthetic rubbers combined with waxes and resins.

2. A sugarless, non-tack chewing gum as claimed in claim 1, wherein the syrup blend is present at from 3 to 15% by weight.
weight of the chewing gum.

3. A sugarless, non-tack chewing gum as claimed in claim 2, wherein the syrup blend is present at from 5 to 10% by weight of the chewing gum.

4. A sugarless, non-tack chewing gum as claimed in any one of claims 1 to 3, wherein the syrup blend includes from 15 to 30% glycerin, from 65 to 72% HSH, and from 5 to 10% water by weight of the syrup blend.

5. A sugarless, non-tack chewing gum as claimed in claim 4, wherein the syrup blend includes from 22 to 28% glycerin, from 67 to 70% HSH, and from 6.5 to 8.5% water, by weight of the syrup blend.

6. A sugarless, non-tack chewing gum as claimed in any of claims 1 to 5, wherein the syrup blend comprises glycerin coevaporated with HSH and water.

7. A sugarless, non-tack chewing gum as claimed in any one of claims 1 to 6, wherein the synthetic elastomer is selected from the group consisting of polyisobutylene, polyisoprene, isobutylene-isoprene copolymer, styrene-butadiene copolymer and combinations thereof.

8. A sugarless, non-tack chewing gum as claimed in any one of claims 1 to 7, wherein the filler is selected from the group consisting of calcium carbonate, magnesium carbonate, talc, tricalcium phosphate, and mixtures thereof.

9. A sugarless, non-tack chewing gum as claimed in any one of claims 1 to 8, wherein the bulk sugarless sweetener is selected from the group consisting of sorbitol, mannitol, xylitol, hydrogenated starch hydrolysates, maltitol, and combinations thereof.

10. A sugarless, non-tack chewing gum as claimed in any of claims 1 to 9, further comprising a chewing gum softener.

11. A sugarless, non-tack chewing gum as claimed in claim 10, wherein the chewing gum softener comprises captrin.

12. A sugarless, non-tack chewing gum as claimed in any one of claims 1 to 11, further comprising a high intensity sweetener.

13. A method of making sugarless, non-tack chewing gum as defined in any one of claims 1 to 12, comprising the steps of:

   preparing the non-tack chewing gum base, which is substantially free of terpene resins;
   adding to the chewing gum base, a sugarless bulk sweetener;
   adding, to the chewing gum base, a flavouring agent;
   adding, to the chewing gum base, a syrup blend including glycerin, HSH and water; and
   mixing the ingredient together to form a homogeneous chewing gum product.

14. A method as claimed in claim 13, wherein the syrup blend includes from 15 to 30% glycerin, from 65 to 72% HSH, and from 5 to 10% water.

15. A method as claimed in claim 14, wherein the syrup blend includes from 22 to 28% glycerin, from 67 to 70% HSH, and from 6.5 to 8.5% water.

16. A method as claimed in any one of the claims 13 to 15, wherein the syrup blend is prepared by coevaporating a mixture of glycerin with HSH and water.

17. A method as claimed in claim 16, wherein the coevaporation is performed under vacuum.

18. A method as claimed in claim 16 or claim 17, wherein the coevaporation is performed at a temperature of 54 to 91°C (130 to 195°F).

19. A method as claimed in any one of the claims 16 to 18, wherein the coevaporation is performed along an isobar on which the water in the mixture has a partial vapour pressure at least equal to the pressure of an atmosphere above the mixture.
20. A method as claimed in any one of claims 13 to 19, wherein the syrup blend is added after preparation of the chewing gum base.

Patentansprüche

1. Zuckerfreier, nicht-klebender Kaugummi umfassend:

   5 bis 95 Gew.-% nicht-klebende Kaugummibase,
   5 bis 95 Gew.-% zuckerfreies Süßungsmittel;
   0,1 bis 15 Gew.-% Aromastoff; und
   1 bis 15 Gew.-% einer Sirupmischung, enthaltend Glycerin, hydrierte Stärkehydrolysate (HSH) und Wasser,

   wobei die nicht-klebende Kaugummibase

   (i) im Wesentlichen frei von Terpenharzen ist,

   (ii) 5 bis 35 % synthetisches Elastomer, 5 bis 50 % eines Gummibasen-Erweichungsmittels, das ausgewählt ist aus der Gruppe bestehend aus hydrierten Pflanzenölen, teilweise hydrierten Pflanzenölen, Tierfetten und Kombinationen davon, 5 bis 40 % Füllstoff, 0 bis 55 % Polyvinylacetat, 0 bis 20 % Fettsäuren und 0 bis 10 % Monoglyceride und Diglyceride von Fettsäuren, bezogen auf das Gewicht der Gummibase, enthält, und

   (iii) natürliche Gummen in Kombination mit natürlichen Harzen und Kolophoniumderivaten, und mit Harzen oder Wachsen, die aus Erdöl stammen; natürliche Gummen in Kombination mit natürlichen oder synthetischen Kautschuken, Kolophoniumderivaten, Polyvinylacetat und Polyterpenen; natürliche Gummen in Kombination mit natürlichen oder synthetischen Kautschuken und Wachsen, die aus Erdöl stammen oder natürlichen Ursprungs sind; oder natürliche oder synthetische Kautschuke in Kombination mit Wachsen und Harzen nicht enthält.


4. Zuckerfreier, nicht-klebender Kaugummi wie in einem der Ansprüche 1 bis 3 beansprucht, wobei die Sirupmischung 15 bis 30 % Glycerin, 65 bis 72 % HSH und 5 bis 10 % Wasser, bezogen auf das Gewicht der Sirupmischung, enthält.

5. Zuckerfreier, nicht-klebender Kaugummi wie in Anspruch 4 beansprucht, wobei die Sirupmischung 22 bis 28 % Glycerin, 67 bis 70 % HSH und 6,5 bis 8,5 % Wasser, bezogen auf das Gewicht der Sirupmischung, enthält.

6. Zuckerfreier, nicht-klebender Kaugummi wie in einem der Ansprüche 1 bis 5 beansprucht, wobei die Sirupmischung mit HSH und Wasser koevaporiertes Glycerin umfasst.


8. Zuckerfreier, nicht-klebender Kaugummi wie in einem der Ansprüche 1 bis 7 beansprucht, wobei der Füllstoff ausgewählt ist aus der Gruppe bestehend aus Calciumcarbonat, Magnesiumcarbonat, Talk, Tricalciumphosphat und Gemischen davon.

9. Zuckerfreier, nicht-klebender Kaugummi wie in einem der Ansprüche 1 bis 8 beansprucht, wobei das zuckerfreie Bulk-Süßungsmittel ausgewählt ist aus der Gruppe bestehend aus Sorbitol, Mannitol, Xylitol, hydrierten Stärkehydrolysaten, Maltitol und Kombinationen davon.

10. Zuckerfreier, nicht-klebender Kaugummi wie in einem der Ansprüche 1 bis 9 beansprucht, der außerdem ein Kau-
gummi-Erweichungsmittel umfasst.


13. Verfahren zum Herstellen von zuckerfreiem, nicht-klebendem Kaugummi wie in einem der Ansprüche 1 bis 12 definiert, umfassend die Schritte:

   Herstellen der nicht-klebenden Kaugummibase, welche im Wesentlichen frei von Terpenharzen ist;

   Zugeben eines zuckerfreien Bulk-Süßungsmittels zu der Kaugummibase;

   Zugeben eines Aromastoffes zu der Kaugummibase;

   Zugeben einer Sirupmischung, die Glycerin, HSH und Wasser enthält, zu der Kaugummibase; und

   Zusammenmischen der Inhaltsstoffe, um ein homogenes Kaugummiprodukt zu bilden.

14. Verfahren wie in Anspruch 13 beansprucht, wobei die Sirupmischung 15 bis 30 % Glycerin, 65 bis 72 % HSH und 5 bis 10 % Wasser enthält.

15. Verfahren wie in Anspruch 14 beansprucht, wobei die Sirupmischung 22 bis 28 % Glycerin, 67 bis 70 % HSH und 6,5 bis 8,5 % Wasser enthält.


17. Verfahren wie in Anspruch 16 beansprucht, wobei die Koevaporation unter Vakuum durchgeführt wird.

18. Verfahren wie in Anspruch 16 oder Anspruch 17 beansprucht, wobei die Koevaporation bei einer Temperatur von 54 bis 91°C (130 bis 195°F) durchgeführt wird.


20. Verfahren wie in einem der Ansprüche 13 bis 19 beansprucht, wobei die Sirupmischung nach der Herstellung der Kaugummibase zugegeben wird.

Revendications

1. Gomme à mâcher sans sucre, non collante, comprenant :

   5 à 95 % en poids d'une base de gomme à mâcher non collante,
   5 à 95 % en poids d'un édulcorant sans sucre ;
   0,1 à 15 % en poids d'un agent aromatisant ; et
   1 à 15 % en poids d'un mélange sous forme de sirop comprenant du glycérol, des hydrolysats d'amidon hydrogénés (HSH) et de l'eau,
   dans laquelle la base de gomme à mâcher non collante

   (i) est pratiquement dépourvue de résines terpéniques,
   (ii) comprend 5 à 35 % d'un élastomère synthétique, 5 à 50 % d'un agent ramollissant de base de gomme choisi dans le groupe consistant en des huiles végétales hydrogénées, des huiles végétales partiellement hydrogénées, des graisses animales et leurs associations, 5 à 40 % d'une charge, 0 à 55 % de pol
(acétate de vinyle), 0 à 20 % d'acides gras et 0 à 10 % de monoglycérides et diglycérides d'acides gras, en poids de la base de gomme, et
(iii) ne comprend pas de gommes naturelles combinées avec des résines naturelles et des dérivés de colophane, et avec des résines ou cires dérivées du pétrole ; de gommes naturelles combinées avec des caoutchoucs naturels ou synthétiques, des dérivés de colophane, du poly(acétate de vinyle) et des polyterpènes ; de gommes naturelles combinées avec des caoutchoucs naturels ou synthétiques et des cires dérivées du pétrole ou d'origine naturelle ; ou de caoutchoucs naturels ou synthétiques combinés avec des cires et des résines.

2. Gomme à mâcher sans sucre, non collante, suivant la revendication 1, dans laquelle la mélange sous forme de sirop est présent en une quantité de 3 à 15 % en poids de la gomme à mâcher.

3. Gomme à mâcher sans sucre, non collante, suivant la revendication 2, dans laquelle le mélange sous forme de sirop est présent en une quantité de 5 à 10 % en poids de la gomme à mâcher.

4. Gomme à mâcher sans sucre non collante, suivant l'une quelconque des revendications 1 à 3, dans laquelle le mélange sous forme de sirop comprend 15 à 30 % de glycérol, 65 à 72 % de HSH et 5 à 10 % d'eau en poids du mélange sous forme de sirop.

5. Gomme à mâcher sans sucre, non collante, suivant la revendication 4, dans laquelle le mélange sous forme de sirop comprend 22 à 28 % de glycérol, 67 à 70 % de HSH et 6,5 à 8,5 % d'eau, en poids du mélange sous forme de sirop.

6. Gomme à mâcher sans sucre, non collante, suivant l'une quelconque des revendications 1 à 5, dans laquelle le mélange sous forme de sirop comprend du glycérol co-évaporé avec des HSH et de l'eau.

7. Gomme à mâcher sans sucre, non collante, suivant l'une quelconque des revendications 1 à 6, dans laquelle l'élastomère synthétique est choisi dans le groupe consistant en polyisobutylène, polyisoprène, copolymère iso-butylène-isoprène, copolymère styrène-butadiène et leurs associations.

8. Gomme à mâcher sans sucre, non collante, suivant l'une quelconque des revendications 1 à 7, dans laquelle la charge est choisie dans le groupe consistant en carbonate de calcium, carbonate de magnésium, talc, phosphate tricalcique et leurs mélanges.

9. Gomme à mâcher sans sucre, non collante, suivant l'une quelconque des revendications 1 à 8, dans laquelle l'édulcorant sans sucre en masse est choisi dans le groupe consistant en sorbitol, mannitol, xylitol, hydrolysats d'amidon hydrogénés, maltitol et leurs associations.

10. Gomme à mâcher sans sucre, non collante, suivant l'une quelconque des revendications 1 à 9, comprenant en outre un agent ramollissant de gomme à mâcher.

11. Gomme à mâcher sans sucre, non collante, suivant la revendication 10, dans laquelle l'agent ramollissant de gomme à mâcher comprend de la captrine.

12. Gomme à mâcher sans sucre, non collante, suivant l'une quelconque des revendications 1 à 11, comprenant en outre un édulcorant à haute intensité.

13. Procédé pour la préparation d'une gomme à mâcher sans sucre, non collante, telle que définie dans l'une quelconque des revendications 1 à 12, comprenant les étapes consistant :
à préparer la base de gomme à mâcher non collante qui est pratiquement dépourvue de résines terpéniques ;
à ajouter à la base de gomme à mâcher un édulcorant sans sucre en masse ;
à ajouter à la base de gomme à mâcher un agent aromatisant ;
à ajouter à la base de gomme à mâcher un mélange sous forme de sirop comprenant du glycérol, des HSH et de l'eau ; et
à mélanger ensemble les ingrédients pour former un produit consistant en gomme à mâcher homogène.

14. Procédé suivant la revendication 13, dans lequel le mélange sous forme de sirop comprend 15 à 30 % de glycérol,
65 à 72 % de HSH et 5 à 10 % d'eau.

15. Procédé suivant la revendication 14, dans lequel le mélange sous forme de sirop comprend 22 à 28 % de glycérol, 67 à 70 % de HSH et 6,5 à 8,5 % d'eau.

16. Procédé suivant l'une quelconque des revendications 13 à 15, dans lequel le mélange sous forme de sirop est préparé en co-évaporant un mélange de glycérol et de HSH et d'eau.

17. Procédé suivant la revendication 16, dans lequel la co-évaporation est effectuée sous vide.

18. Procédé suivant la revendication 16 ou la revendication 17, dans lequel la co-évaporation est effectuée à une température comprise dans l'intervalle de 54 à 91°C (130 à 195°F).

19. Procédé suivant l'une quelconque des revendications 16 à 18, dans lequel la co-évaporation est effectuée le long d'une ligne isobare sur laquelle l'eau dans le mélange a une pression partielle de vapeur au moins égale à la pression d'une atmosphère au-dessus du mélange.

20. Procédé suivant l'une quelconque des revendications 13 à 19, dans lequel le mélange sous forme de sirop est ajouté après la préparation de la base de gomme à mâcher.