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(54) Title: CHEWY CONFECTIONERY PRODUCT

(57) Abstract: A chewy confectionery product comprised of pectin and having a low water content compared to that of traditional chewy confectionery products. The pectin of the present invention helps eliminate the need for traditional texturizing agents while maintaining the quality, texture and consistency of chewy confectionery products made with traditional texturizing agents. In fact, the chewy confectionery product of the current invention has a texture which consumers may find to be more desirable than that of traditional chewy confectionery products. The chewy product of the current invention also has reduced stickiness and cold-flow properties when compared to a traditional chewy confectionery product and also provides a cleaner-breaking bite.



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CHEWY CONFECTIONERY PRODUCT

Field of the Invention

[0001] The present invention relates to chewy confectionery products. More specifically, this invention relates to improved formulations for creating a chewy confectionery product with a low water content (when compared to traditional chewy confectionery products) free of traditional texturizing agents. "Traditional texturizing agents" are defined as gelatin, starch, and egg white (albumin). The chewy confectionery product of the present invention provides a chewy confectionery product similar to chewy confectionery products made with traditional texturizing agents, but with a more desirable chew and processing characteristics. The product of the current invention also appeals to a larger population since the present invention eliminates the need for gelatin and egg white, both animal derived products, while giving similar characteristics to products produced using gelatin or egg white.

Background of the Invention

[0002] Traditional chewy confectionery products are typically made with a sweetener and a texturizing agent. Commonly used sweeteners are sucrose and glucose syrup. A fat is also commonly added to such chewy confectionery products to achieve desired chew characteristics. Chewy confectionery products have a cohesive nature under normal room conditions. Chewy confectionery products may further include water, foaming agents, humectants, artificial and natural sweeteners, emulsifiers, flavor enhancers, acids, essential oils, artificial or natural flavorings, colorings, fruit juices, vegetable juices, proteins, and other additives typically used in the production of chewy confectionery products as desired. Often times chewy confectionery products are referred to as chewy candy, toffee, gummies, or taffy.

[0003] Traditional chewy confectionery products typically contain gelatin, starch, egg white (albumin), or combinations thereof as the texturizing agent so that they have the chewy texture that is desirable for the products. Gelatin is the most popular of the texturizing agents as it gives the chewy confectionery products a long-

lasting cohesive chew; however, there are also several downfalls to using gelatin in confectionery products. Food-grade gelatin is obtained from bovine or porcine raw materials and is thus undesirable to a number of groups who observe certain dietary restrictions. Additionally, since gelatin is a protein it is highly sensitive to temperature and/or acid which may cause it to degrade and even foul.

[0004] Egg white, also known as albumin, is also traditionally used as a texturizing agent; however, similarly to gelatin albumin is also an animal product and is thus undesirable to a number of groups who observe certain dietary restrictions. Because egg white is also a protein there are also processing limitations similar to those of gelatin associated with use of egg white as the texturizing agent.

[0005] Starches are also traditionally used as texturizing agents; however, they typically have a low gelling tendency and are not as useful alone in creating the ideal chewy texture in a chewy confectionery product. Starches will most often be used in conjunction with gelatin to achieve the desired chewy texture and consistency for a chewy confectionery product.

[0006] Typically when starch is used as the texturizing agent water, glucose syrup and the starch are pre-mixed and heated to a desired temperature and then cooked at that temperature until the starch has gelatinized forming a starch gel. Both modified and unmodified starches can act as gelling agents in confectionery applications. Starch is basically long polymers of glucose (a.k.a. dextrose) units that are arranged into discrete, highly organized, semi-crystalline aggregates called "starch granules". These starch polymers within the "granule" are either straight-chain/linear (amylose) or highly branched (amylopectin). Starches vary by source in their amylopectin-to-amylose ratios.

[0007] When a starch is gelatinized the crystalline structure of the granules is lost, and the granules begin to swell/take up water/increase in size and increase the viscosity of the aqueous system and fully cook out in the candy-making process to the point where the granules lose integrity/fragment/rupture. As this cooked starch cools, the solubilized straight-chain amylose polymers re-align tightly to form a gel (a process known as retrogradation). Gelling starches are most often used in jelly-type candies with a firm but tender, sticky and pasty chew, i.e. jelly bean centers, gum

drops, orange slices, spearmint leaves, licorice bites, etc. Typically all the starches used in jelly confectionery are the amylose-containing varieties. The higher the amylose content in the starch, the stronger the resulting gel; as you would expect, the high amylose corn starches form much stronger and much more rapidly setting gels versus starches containing less amylose.

[0008] When the starch has gelatinized the confectionery product is cooled and transferred to a mixer where the remaining ingredients are added (gelatin, fat, emulsifiers, acid, flavors, etc.) and mixed until the desired density or texture is reached. The texture of the candy can be altered by whipping air into it rather than pulling it if a lighter texture is desired. A foaming agent can also be used to add texture to a traditional chewy confectionery product. The chewy confectionery product is then rolled and cut into the desired shapes and sizes. The cut candy can then be packaged into appropriate packaging for distribution.

[0009] Typically when gelatin is used as the texturizing agent water, glucose syrup and sucrose are first cooked together and then combined with a hydrated gelatin to achieve a mixture containing the desired moisture target of the final chewy confectionery product. When using the gelatin, there are temperature and time limitations with regards to exposure to high heat. Gelatin must be added at either a low heat or it can be added quickly at high heat (so the gelatin is not exposed to the high heat for a long period of time) so as to not degrade or foul the gelatin. Starch and other previously mentioned commonly used ingredients in chewy confectionery products can further be added to the mixture to achieve the desired texture, color, and taste and then the mixture is poured into molds to form while cooling.

[0010] Typically when egg white is used as the as a texturizing agent a fresh, pasteurized or rehydrated egg white is beaten into a foam with or without other ingredients. The foam is then set by cooking or by combining it with a hot carbohydrate syrup. Other commonly used chewy confectionery product ingredients can then be further added to the mixture.

[0011] As mentioned, besides being used as the sole gelling agent in traditional chewy confectionery products, some starches can also be used to

partially replace/complement gelatin in gummy-type candies where a softer, less chewy/ less elastic texture is desired or to as texturizing agent.

[0012] Starch can also be used to replace or complement more expensive and/or harder-to-source ingredients such as gelatin or gum arabic. Starch can help to modify the chew characteristics of the candy (i.e. increasing the structure/body, softness, chewiness, and elasticity of the candy while reducing “toothstick”). Starch has also been found to help inhibit sugar recrystallization and reduce cold flow in traditional chewy confectionery products.

[0013] Cold flow is a common problem with traditional chewy confectionery products. “Cold flow” is defined as the distortion, deformation, or dimensional change which takes place in a material under ambient conditions and pressures with an inability to return to its original dimensions. When products cold flow the shape of the product deforms causing inconsistent and distorted looking products which may not be very desirable by consumers. Often times cold flow becomes a problem during storage. Stickiness can also be a big problem for traditional confectionery products causing products to stick or clump together in the packaging.

[0014] Each traditional texturizing agent has its own advantages. One of the advantages of using starch as the texturizing agent in such products is that it allows one to control the viscosity of the substance during production, which helps with control of subsequent cold flow during storage. The advantage of using gelatin as the texturizing agent in chewy confectionery products is that the gelatin gives the candy a distinctive chewy texture that ranges from soft to very firm depending on the amount of gelatin used. Using egg white as the texturizing agent helps stabilize incorporated air thus keeping air bubbles from collapsing – this gives the product a light and airy texture.

[0015] As previously mentioned use of egg white and gelatin as texturizing agents is not desirable in the confectionery industry as both are animal derived ingredients. Additionally, since gelatin and egg white are proteins they are sensitive to temperature and/or acid which may cause them to degrade or foul. Use of starch, on the other hand, eliminates the use of animal products in the chewy confectionery product, but it tends to have a low gelling tendency and is not as useful alone in

creating the ideal chewy texture in a chewy confectionery product thus gelatin is most often added to achieve the desired chew characteristics and texture. Gelatin tends to add a bouncy, rubbery texture.

[0016] It is, therefore, desirable to create a chewy confectionery product that excludes traditional texturizing agents but retains the texture and properties attributed to traditional texturizing agents which are desired by the consumer while reducing cold flow and stickiness. In particular, it is desirable to provide a chewy confectionery product which has a long-lasting cohesive chew acceptable to the consumer without the use of starch or animal products, such as gelatin and egg white.

Summary of the Invention

[0017] This invention is directed to a novel chewy confectionery product which eliminates the need for traditional texturizing agents in the product formulation. The product of the current invention contains pectin and has a low water content compared to traditional chewy confectionery products. The chewy confectionery product of the current invention forms a consumer desirable commercial product without the need for animal derived components, such as gelatin and egg white, and thus all the disadvantages associated with them. The product of the present invention also improves problems with cold flow and stickiness that are associated with traditional chewy confectionery products and provides the consumer with a cleaner-breaking bite. By reducing cold flow the present invention allows for better looking and more consistently shaped products. By producing a less sticky chewy confectionery product there are fewer problems with the product pieces sticking together and sticking to a consumer's teeth. These improved physical properties of the chewy confectionery product of the current invention over traditionally chewy confectionery products also have additional advantages, for example the elimination of packaging for individual pieces of chewy confectionery product and reduction in processing difficulties.

[0018] An additional advantage of the current invention is that the formulation of the chewy confectionery product provides a chewy confectionery product which may be more desirable to consumers than a similar traditional chewy confectionery

product containing traditional texturizing agents. The product of the current invention provides a softer chew and mouthfeel than traditional texturizing agent based chewy confectionery products. These characteristics may provide consumers with a more acceptable and desirable chewy confectionery product.

[0019] The present invention relates to a chewy confectionery product comprised of pectin at a minimum amount of 0.2 percent by weight on a dry basis of the chewy confectionery product and has a low water content of 3 to 13 percent. The chewy confectionery product of the present invention can additionally be comprised of a sweetener. The sweetener may include, but is not limited to, any of a number of carbohydrates and sugar substitutes commonly found in confectionery products. Examples include the various sugars (for example monosaccharides such as glucose (dextrose), fructose and galactose, and their polymers and disaccharides such as sucrose, maltose, lactose, and their polymers, etc.), the various types of glucose syrups (corn syrup, rice syrup, high maltose syrup, high fructose syrup, etc.), sugar alcohols (polyols) or other sugar substitutes, high intensity sweeteners, and natural or artificial sweeteners and combinations thereof. The sweetener may be added to the product of the current invention in the amount of 10 to 99.8% percent by weight on a dry basis of the chewy confectionery. Fat may also be added to the product of the current invention in the amount of 0.5 to 25 percent by weight on a dry basis of the chewy confectionery product.

[0020] The chewy confectionery product may also include one or more additional ingredients traditionally used in the confectionery industry – these include but are not limited to other hydrocolloids (such as gum Arabic, xanthine gum, locust bean gum, gellan gum, carrageenan, and gum Arabic), acidulants, sensates, buffering agents, humectants, artificial and natural sweeteners, sugar alcohols, emulsifiers, flavor enhancers, proteins, artificial and natural flavors, essential oils, fruit juices, vegetable juices, colorings, and other commonly used confectionery ingredients. The chewy confectionery product may also include vitamins, supplements, dairy (such as evaporated milk, concentrated milk, dry milk, whey, butter, cream, yogurt, buttermilk, etc.), fiber, nuts, cereal or other similar food ingredients.

[0021] The chewy confectionery product of the current invention is defined as the chewy base portion only and does not include layers which are made of different confectionery products, coatings, center fillings or added non-confectionery ingredients such as grains, nuts, cereals, supplements, vitamins, etc. The chewy confectionery product of the present invention may, however, be layered, coated, center-filled or have other non-confectionery ingredients added to it. The product may be center filled with a liquid, syrup, or powder. The coating can be a hard or soft coating. The chewy confectionery product can also be glazed or polished with food approved substances such as shellac. The chewy confectionery product can also be layered with chocolate or any other confectionery or food product including traditional chewy confectionery products. Additionally if the use of traditional texturizing agents is desirable a traditional texturizing agent may also be added to the chewy confectionery product of the present invention.

[0022] The use of pectin at a low moisture level in combination with the sweetener and other ingredients described in the present invention helps eliminate the need for traditional texturizing agents while maintaining the quality, texture and consistency of chewy confectionery products made with these traditional texturizing agents. In fact, the chewy product of the current invention has a texture which could be more desirable by consumers than that of traditional chewy confectionery products. The chewy product of the current invention also has reduced stickiness, cleaner-breaking bite, and significantly reduced cold-flow properties when compared to a traditional chewy confectionery product.

Description of the Invention

[0023] The present invention provides a chewy confectionery product having a low water content which is produced without the use of traditional texturizing agents. It has surprisingly been found that the use of pectin in a chewy confectionery product, without the use of traditional texturizing agents, can achieve a consistency and texture similar to, and in fact more well-liked and desirable than, that of traditional chewy confectionery products while eliminating the need for animal based ingredients such as gelatin and egg white. The chewy confectionery product of the current

invention also has some surprising advantages over traditional chewy confectionery products – these include reduced cold flow and stickiness and a cleaner-breaking bite.

[0024] The chewy confectionery product of the current invention uses pectin to form a similar chewy confectionery product texture as that formed using a traditional texturizing agent. Pectin is a heterogeneous grouping of acidic structural polysaccharides found in fruit and vegetables and mainly prepared from 'waste' citrus peel and apple pomace. Pectin is produced commercially as a white to light brown powder and is used in food as a gelling agent.

[0025] The chewy confectionery product of the present invention contains pectin at a minimum amount of 0.2 percent by weight on a dry basis of the chewy confectionery product. The chewy confectionery product has a water content between 3 and 13 percent by weight of the chewy confectionery product, more preferably between 5 and 9 percent by weight of the chewy confectionery product, and most preferably between 6 and 8 percent by weight of the chewy confectionery product.

[0026] According to one embodiment of the present invention the chewy confectionery product is comprised of pectin and a sweetener. The sweetener may include, but is not limited to, any of a number of carbohydrates or sugar substitutes commonly found in confectionery products. Examples include the various sugars (for example monosaccharides such as glucose (dextrose), fructose and galactose and their polymers and disaccharides such as sucrose, maltose, lactose, and their polymers, etc.), the various types of glucose syrups (corn syrup, rice syrup, high maltose syrup, high fructose syrup, etc.), sugar alcohols (polyols) or other sugar substitutes, high intensity sweetener, natural or artificial sweetener, and combinations thereof. In one embodiment of the present invention the sweetener may include a crystallizing sweetener and a non-crystallizing sweetener. In one embodiment of the present invention the sweetener is a combination of sucrose and a glucose syrup. The sweetener may be present in the amount of 10 to 99.8 percent by weight on a dry basis of the chewy confectionery product, more preferably 70 to 99 percent by weight on a dry basis of the chewy confectionery product, and most

preferably 80 to 95 percent by weight on a dry basis of the chewy confectionery product. In one embodiment of the present invention, where sucrose and a glucose syrup are being used as the sweetener, the sucrose can be present in the amount of 20 to 80 percent by weight on a dry basis of the chewy confectionery product, more preferably 50 to 70 percent by weight on a dry basis of the chewy confectionery product, and most preferably 60 to 65 percent by weight on a dry basis of the chewy confectionery product.

[0027] In another embodiment of the present invention the chewy confectionery product further contains fat. The fat may include, but is not limited to, any of a number of fats commonly used in confectionery products. Examples of such fats include but are not limited to dairy fats, modified and unmodified palm oil, palm kernel oil, coconut oil, soybean oil, and cottonseed oil. Fat may be added to the chewy confectionery product in the amount of 0.5 to 20 percent by weight on a dry basis of the chewy confectionery product, more preferably 2 to 8 percent by weight on a dry basis of the chewy confectionery, and most preferably 3 to 7 percent by weight on a dry basis of the chewy confectionery product.

[0028] In another embodiment of the present invention the chewy confectionery product may also include one or more additional ingredients traditionally used in the confectionery industry – these include but are not limited to other hydrocolloids (such as gum Arabic, xanthine gum, locust bean gum, gellan gum, carrageenan, and gum Arabic), acidulants, sensates, buffering agents, humectants, artificial and natural sweeteners, sugar alcohols, emulsifiers, flavor enhancers, proteins, artificial and natural flavors, essential oils, fruit juices, vegetable juices, colorings, and other commonly used confectionery ingredients. In another embodiment of the present invention vitamins, supplements, dairy (such as evaporated milk, concentrated milk, dry milk, whey, butter, cream, yogurt, buttermilk, etc.), fiber, nuts, or other similar ingredients can also be added to the chewy confectionery product.

[0029] According to an embodiment of the invention, the chewy confectionery product is preferably substantially free of traditional texturizing agents. “Substantially free” is intended to mean that the product has no intentional addition

of gelatin, starch, or egg white or that the amount of gelatin, starch, or egg white does not contribute to the chewy consistency of the product. Alternatively, in another embodiment the chewy confectionery product may contain additional traditional texturizing agents which help with the desired final consistency and texture of the product.

[0030] In an embodiment of the present invention the chewy confectionery product may be center-filled with a liquid, syrup, or powder. Such center filling may contain vitamins, supplements, nutritional ingredients, minerals, herbal extracts, oligosaccharides and the like. Such center filling could also include chocolate and other forms of confectionery and food products. In another embodiment of the present invention the chewy confectionery product can be coated. The coating can be a hard or soft coating. The coating may be comprised of sucrose-based ingredients, dextrose-based ingredients, sucrose-free ingredients, sugar alcohol ingredients, or combinations thereof. The coating can also be comprised of chocolate or other dairy or non-dairy fat based food approved ingredients. The chewy confectionery product can also be glazed or polished with food approved substances such as shellac. In another embodiment of the current invention the chewy confectionery product can be layered with chocolate or any other confectionery or food product.

[0031] The chewy confectionery product of the present invention can be produced using any of several processes common to creating chewy confectionery products. An example of a typical process for creating a chewy confectionery product similar to that of the present invention entails mixing together and cooking the sweetener with water. Pectin is then mixed into the sweetener mixture. The pectin can be added pre or post-cooking. If added after cooking it may be pre-hydrated to improve its functionality. If adding fat the fat component can be mixed in after the pectin is added or before it is added. Depending on the equipment being used, the fat component may be added at any stage of the production process and not just immediately after or before the pectin is added. Flavor, color, acid, and other confectionery ingredients could be mixed in at the very end to prevent degradation. The product may or may not be grained. It is then cooled, extruded, and further

cooled before the pieces are scored, broken up, and then wrapped if necessary. In various other embodiments the product can be molded or deposited. As previously mentioned, the chewy confectionery product of the current invention does not need individual wrapping due to its physical properties which prevent the individual pieces of product from sticking together in a package.

[0032] In accordance with various embodiments of the current invention the chewy confectionery product may be aerated during processing or formation. The chewy confectionery product may be aerated by pulling, whipping air into the product, incorporating foaming agents, or using other aerating methods depending on the final desired texture of the product. As previously stated in various embodiments of the present invention the chewy confectionery product may be center-filled with a liquid, syrup, or powder during processing. In various embodiment of the present invention the chewy confectionery product can also be coated or polished/glazed once it is formed. As previously stated, in various other embodiments of the current invention the chewy confectionery product can be layered with chocolate or any other confectionery or food product. The layered product can be formed/processed using traditional methods of layering confectionery products such as extrusion, compression, molding, depositing, etc.

COMPARATIVE EXAMPLES

[0033] The following comparative examples are provided to illustrate the advantages of the current invention over traditional chewy confectionery products. These examples compare the movement or cold flow of samples of traditional chewy confectionery products to the chewy confectionery product of the current invention. One of the major advantages of the present invention is the reduction in movement and cold flow compared to traditional chewy confectionery products and this can be seen from the examples.

[0034] Samples of identical chewy confectionery products having identical water contents were prepared using different texturizing agents – one with starch, one with gelatin, and one with pectin. The samples were prepared by combining the same cooked syrup with different hydrated texturizing agent blends. The cooked

syrup was prepared by mixing 5.8% fat, 0.06% emulsifier, 43.5% sucrose, and 50.67% corn syrup and cooking the mixture to a temperature of 260°F. The cooked syrup was then combined with three different texturizing agent blends, each texturizing blend having the same water content. The texturizing blends were made of pectin, starch, or gelatin combined with sucrose and water to achieve the desired water content. The final composition of the samples was about 5.5% fat, 0.05% emulsifier, 43.4% sucrose, 38.5% corn syrup solids, 0.79% texturizing agent (comprised of either pectin, starch or gelatin), and 11.8% water. During the preparation process some of the water was cooked off in each sample thus lowering the water content of the final products.

[0035] The samples of the different chewy confectionery products were then set at ambient conditions and analyzed for movement and cold flow over time. Figure 1 shows the samples immediately after preparation. Figure 2 shows the samples 24 hours after preparation. Figure 3 shows the samples 48 hours after preparation. Figure 4 shows the samples 96 hours after preparation. Figure 5 shows the samples 7 days after preparation. The samples were analyzed for amount of movement and cold flow. As seen in the figures, over a 7-day period there was no movement or cold-flow seen in the pectin based samples while the amount of movement and cold flow of the starch and gelatin samples was substantial.

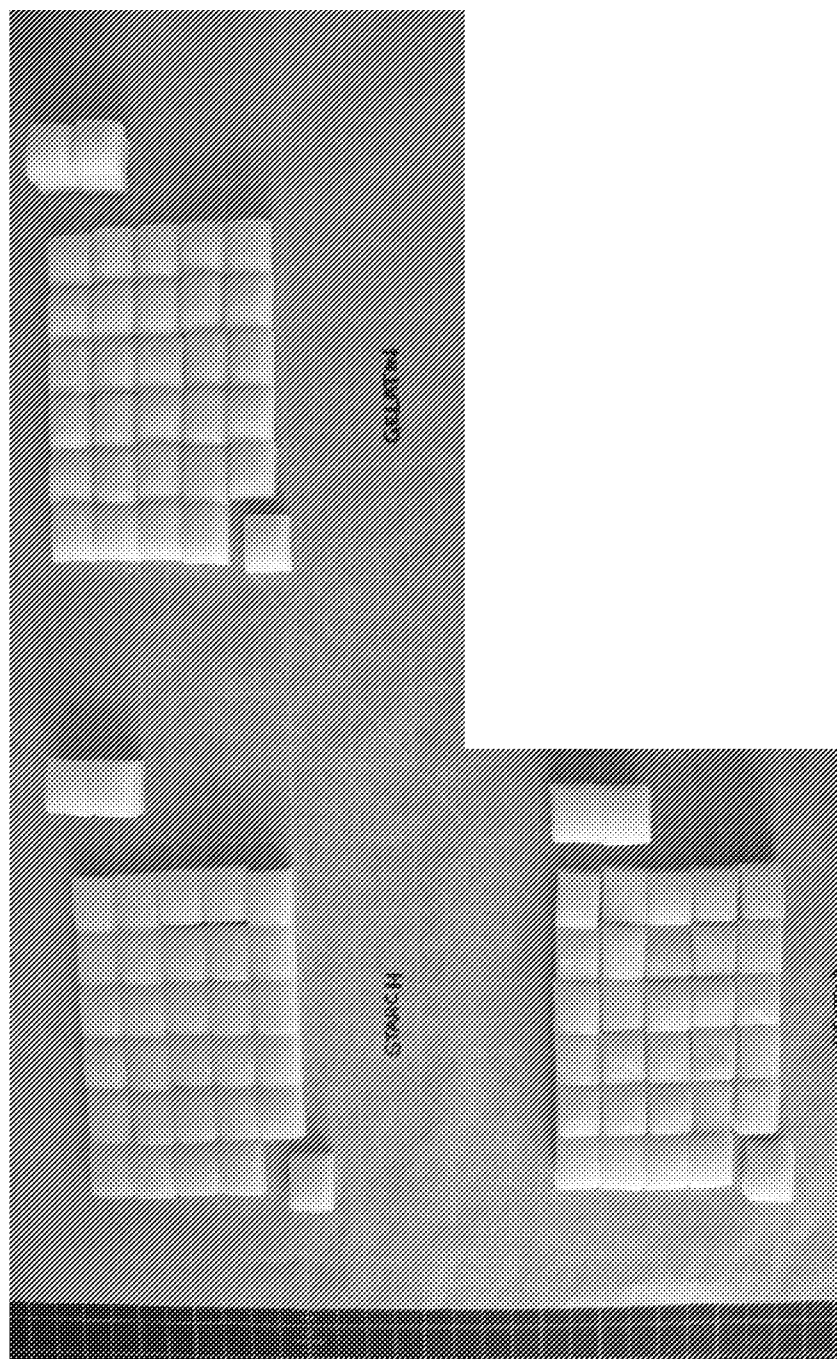
What is claimed is:

1. A chewy confectionery product which is substantially free of traditional texturizing agents comprised of pectin at a minimum of 0.2 percent by weight on a dry basis of the chewy confectionery product, such chewy confectionery product having a water content of 3 to 13 percent.
2. The chewy confectionery product of Claim 1 having water content of 5 to 9 percent and more preferably 6 to 8 percent.
3. The chewy confectionery product of Claim 1 additionally comprised of a sweetener.
4. The chewy confectionery product of Claim 3 additionally comprised of fat.
5. The chewy confectionery product of Claim 3 wherein the sweetener is present from 10 to 99.8% percent by weight on a dry basis of the chewy confectionery product, more preferably 70 to 99 percent by weight on a dry basis of the chewy confectionery product, and most preferably 80 to 95 percent by weight on a dry basis of the chewy confectionery product.
6. The chewy confectionery product of Claim 4 wherein the fat is present from 0.5 to 20 percent by weight on a dry basis of the chewy confectionery product, more preferably 2 to 8 percent by weight on a dry basis of the chewy confectionery product, and most preferably 3 to 7 percent by weight on a dry basis of the chewy confectionery product.
7. The chewy confectionery product of Claim 3 wherein the sweetener is selected from the group consisting of monosaccharides or disaccharides and polymers thereof, glucose syrup, polyols, sugar substitutes, high intensity sweeteners, natural or artificial sweeteners and combinations thereof.
8. The chewy confectionery product of Claim 3 wherein the sweetener is a combination of sucrose and a glucose syrup.
9. The chewy confectionery product of Claim 8 wherein the sucrose is present from 20 to 80 percent by weight on a dry basis of the chewy confectionery product, more preferably from 50 to 70 percent by weight on a dry basis of

the chewy confectionery product, and most preferably from 60 to 65 percent by weight on a dry basis of the chewy confectionery product.

10. A chewy confectionery product comprised of fat from 3 to 7 percent by weight on a dry basis of the chewy confectionery product, sweetener from 80 to 95 percent by weight on a dry basis of the chewy confectionery product, and pectin at a minimum of 0.2 percent by weight on a dry basis of the chewy confectionery product, such chewy confectionery product having a water content of 6 to 8 percent.
11. The chewy confectionery product of any of the preceding claims which is aerated.
12. The chewy confectionery product of any of the preceding claims which contains a center filling.
13. The chewy confectionery product of any of the preceding claims additionally comprised of a coating.
14. The chewy confectionery product of Claim 13 wherein the coating is comprised of dextrose-based ingredients, sucrose-based ingredients, sucrose-free ingredients, sugar alcohols, fat based ingredients, and combinations thereof.
15. The chewy confectionery product of any of the preceding claims additionally comprised of a traditional texturizing agent.
16. The chewy confectionery product of any of the preceding claims additionally comprised of a confectionery product which does not contain pectin.
17. The chewy confectionery product of Claim 16 wherein the chewy confectionery product is layered with a confectionery or food product.
18. The chewy confectionery product of Claim 17 wherein the chewy confectionery product is layered with a traditional chewy confectionery product.

FIGURE 1 – 0 hours



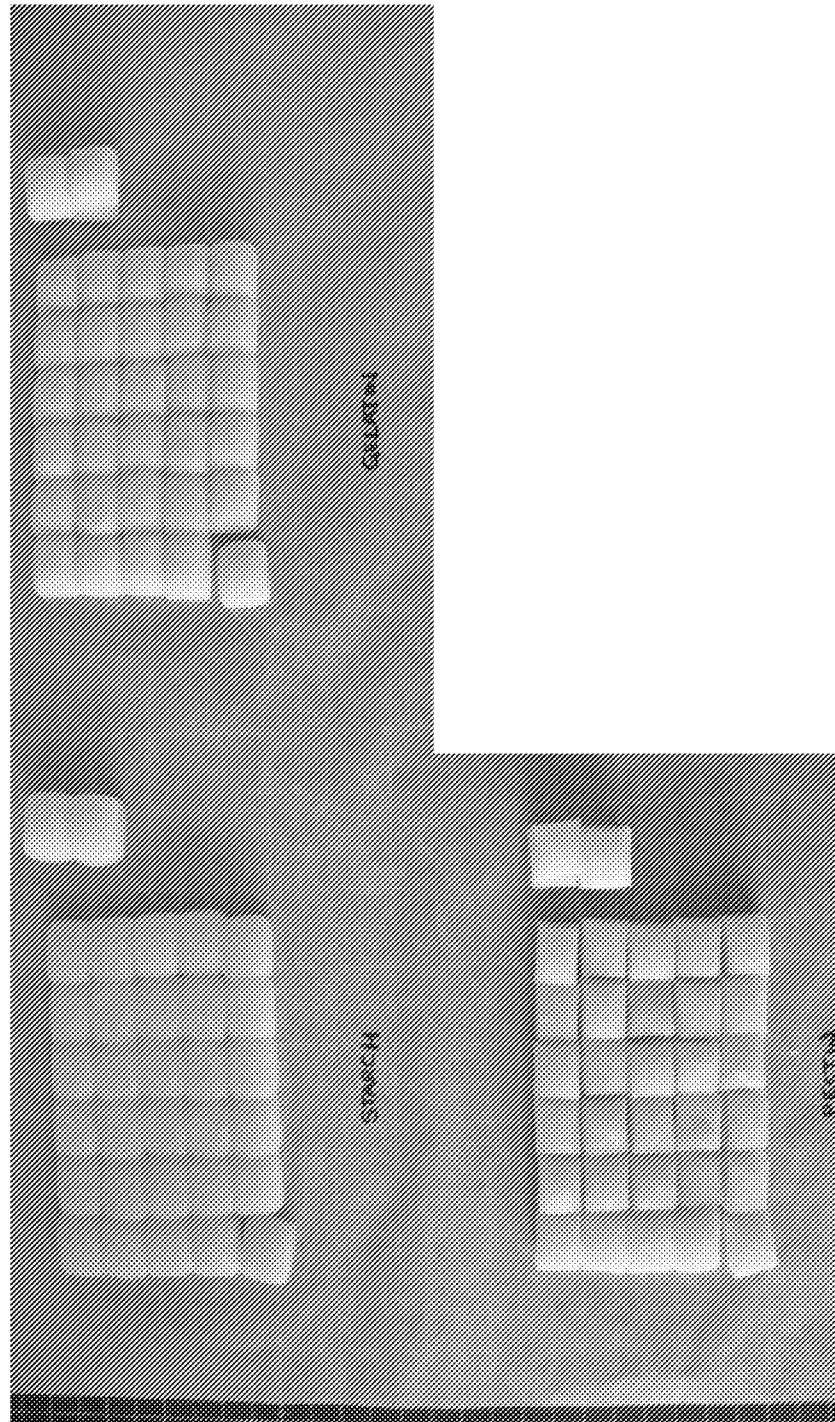


FIGURE 2 – 24 hours

FIGURE 3 – 48 hours

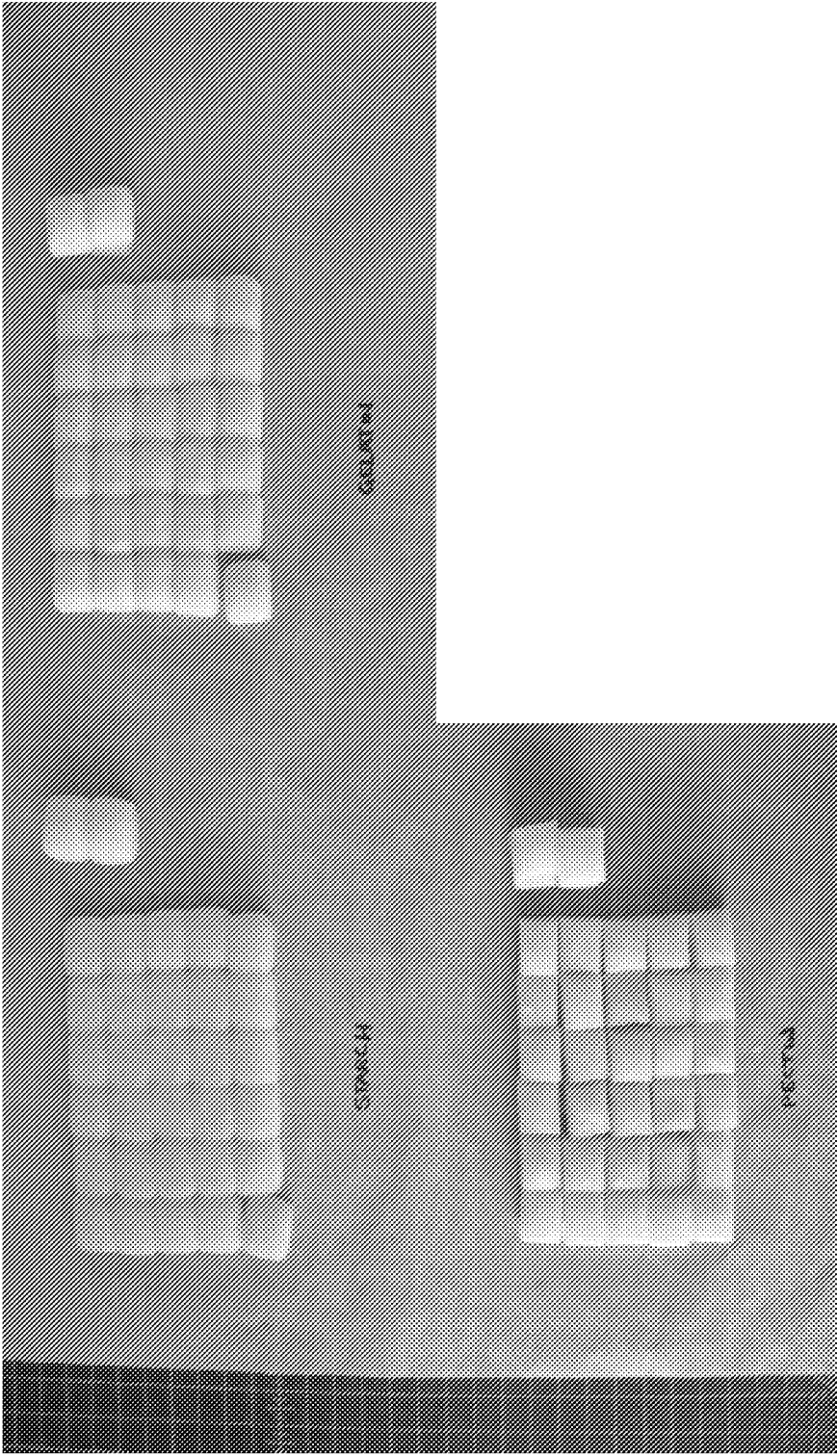


FIGURE 4 – 96 hours

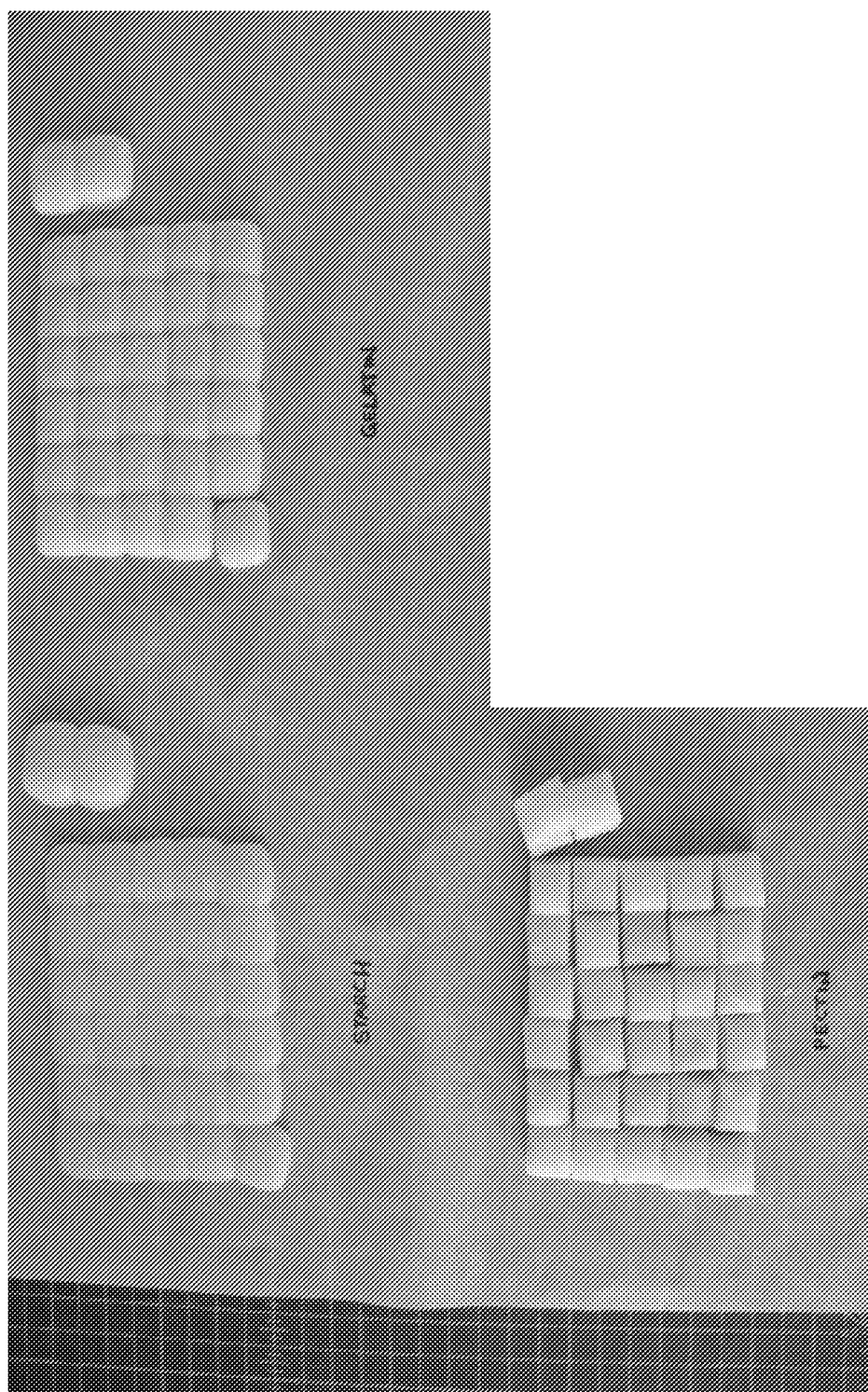
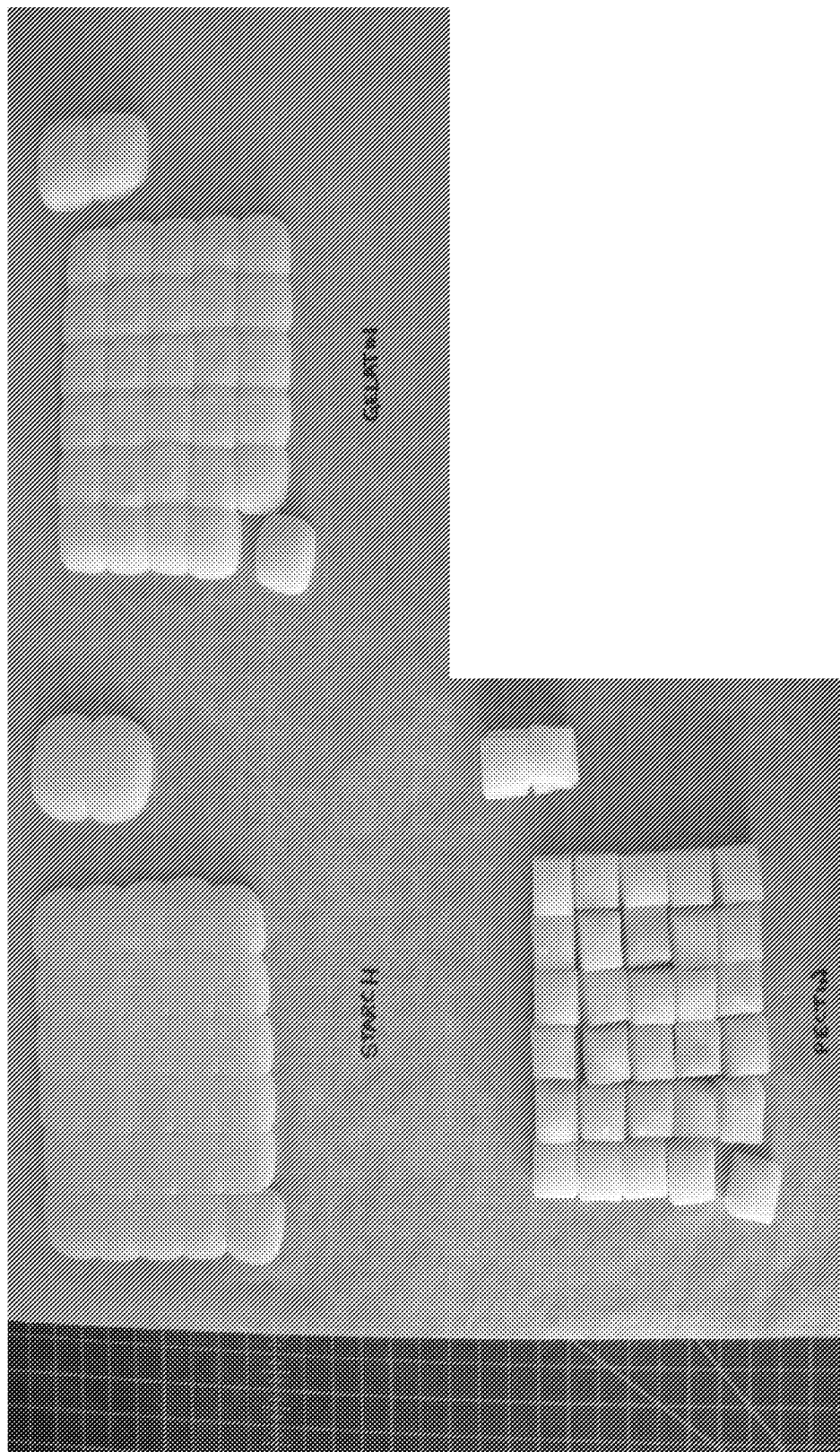


FIGURE 5 – 7 days



INTERNATIONAL SEARCH REPORT

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International application No.

PCT/US14/11516

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A23G 3/00, 3/34, 3/36 (2014.01) USPC - 426/573, 660, 661 According to International Patent Classification (IPC) or to both national classification and IPC														
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC: A23G 3/00, 3/34, 3/36, 3/42, 3/54 (2014.01) USPC: 426/3, 564, 573, 660, 661 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); Google Scholar; ProQuest; IP.com; chewy, confection, pectin, water, sweetener, sucrose, glucose, fat, aeration														
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>US 2003/0035877 A1 (BEST, ET et al.) 20 February 2003; paragraphs [0022]-[0023], [0094], [0098]</td> <td>1-9, 11/1-9</td> </tr> <tr> <td>Y</td> <td>US 2005/0013923 A1 (SHIMEK, J et al.) 20 January 2005; paragraphs [0055], [0074], [0093]; claim 1</td> <td>1-9, 11/1-9</td> </tr> <tr> <td>A</td> <td>US 2006/0034976 A1 (COTTEN, GB et al.) 16 February 2006; entire document</td> <td>1-9, 11/1-9</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	US 2003/0035877 A1 (BEST, ET et al.) 20 February 2003; paragraphs [0022]-[0023], [0094], [0098]	1-9, 11/1-9	Y	US 2005/0013923 A1 (SHIMEK, J et al.) 20 January 2005; paragraphs [0055], [0074], [0093]; claim 1	1-9, 11/1-9	A	US 2006/0034976 A1 (COTTEN, GB et al.) 16 February 2006; entire document	1-9, 11/1-9
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☐ Further documents are listed in the continuation of Box C. ☐														
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Date of the actual completion of the international search 24 March 2014 (24.03.2014)		Date of mailing of the international search report 23 JUN 2014												
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774												

INTERNATIONAL SEARCH REPORT

14/011516-23.06.2014

International application No.

PCT/US14/11516

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 12-18
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

****See Continuation Sheet****

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-9, 11/1-9

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

-Continued from Box III: Observations where unity of invention is lacking-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-9, 11/1-9 are directed toward a chewy confectionery product.

Group II: Claims 10, 11/10 are directed toward another chewy confectionery product.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

the special technical features of Group I include a chewy confectionery product which is substantially free of traditional texturizing agents, which are not present in Group II;

the special technical features of Group II include a chewy confectionery product comprised of fat from 3 to 7 percent by weight on a dry basis of the chewy confectionery product, sweetener from 80 to 95 percent by weight on a dry basis of the chewy confectionery product, which are not present in Group I.

The common technical features of Groups I-II are a chewy confectionery product comprised of pectin at a minimum of 0.2 percent by weight on a dry basis of the chewy confectionery product, such chewy confectionery product having a water content of 6 to 8 percent.

These common technical features are disclosed by US 2005/0013923 A1 to Shimek, et al. (hereinafter 'Shimek'). Shimek discloses a chewy confectionery product (the dried soft aerated confections are also chewy; paragraph [0074]) comprised of pectin at a minimum of 0.2 percent by weight on a dry basis of the chewy confectionery product (about 0.5 to 20 percent preferably 2.5 percent dry weight basis of structuring agent such as pectin; paragraphs [0017], [0051]), such chewy confectionery product having a water content of 6 to 8 percent (about 1 to 10 percent moisture (water); paragraph [0019]).

Since the common technical features are previously disclosed by Shimek, these common features are not special and so Groups I-II lack unity.