(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 December 2018 (13.12.2018)

WIPO | PCT

(10) International Publication Number
WO 2018/224698 A1

(51) International Patent Classification:
A23C 9/13 (2006.01) *A23L 27/30* (2016.01)
A23C 11/10 (2006.01)

(21) International Application Number:
PCT/EP2018/072664

(22) International Filing Date:
22 August 2018 (22.08.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
17187483.7 23 August 2017 (23.08.2017) EP

(71) Applicant: **DSM IP ASSETS B.V.** [NL/NL]; Het Overloon 1, 6411 TE HEERLEN (NL).

(72) Inventors: **VAN DEN BERG, Marco, Alexander**; P.O. Box 4, 6100 AA ECHT (NL). **MALJAARS, Cornelia, Elizabeth, Paulina**; P.O. Box 4, 6100 AA ECHT (NL). **NIJMEIJER, Marieke**; P.O. Box 4, 6100 AA ECHT (NL).

(74) Agent: **DSM INTELLECTUAL PROPERTY**; P.O. Box 4, 6100 AA ECHT (NL).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*
— *upon request of the applicant, before the expiration of the time limit referred to in Article 21(2)(a)*
— *with (an) indication(s) in relation to deposited biological material furnished under Rule 13bis separately from the description (Rules 13bis.4(d)(i) and 48.2(a)(viii))*

(54) Title: YOGHURT COMPRISING REBAUDIOSIDE M

(57) Abstract: A yogurt comprises rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably from about 25 ppm to about 600 ppm, and an added sugar in an amount of from about 0% to about 10% (wt).

WO 2018/224698 A1

YOGHURT COMPRISING REBAUDIOSIDE M

Field

The present invention relates to a yogurt. The invention further relates to a process for the production of a yogurt and to the use of rebaudioside M in a yogurt.

Background

Yogurts are often provided with added sugar in order to provide a yogurt having a sweetened flavour. However, besides providing a sweetened flavour, the added sugar also improves the texture and sensory attributes such as mouthfeel thickness and creaminess of the yogurt. Especially in countries where plain yogurt is perceived as acidic, added sugar amounts of 7 to 15 % (wt) to sweeten the product are reported.

In view of health concerns related to the consumption of sugar, there have been several research efforts for sugar substitutes, such as the use of so-called high intensity sweeteners. However, a problem with high intensity sweeteners is that often they do not provide the same sensorial properties of sugar and may introduce off flavours to the yogurt.

High intensity sweeteners possess sweetness levels many times exceeding that of sucrose and are often essentially non-caloric. Although natural caloric sweeteners such as sucrose, fructose, and glucose provide the most desirable taste to consumers, they are caloric. High intensity sweeteners do not affect the blood glucose level and provide little or no caloric value.

Replacing part of the sugar by available high intensity sweeteners, that generally are used as sucrose substitutes, are reported to lead to food products with taste characteristics different from those sweetened with sugar, such as sweet taste with a different temporal profile, maximum response, flavor profile, mouthfeel, and/or adaptation behavior than that of sugar. For example, the sweet taste of some high-potency sweeteners is slower in onset and longer in duration than that of sugar and thus changes the taste balance of a food composition. Because of these differences, usage of a high-potency sweetener in replacing such a bulk sweetener as sugar in a food or beverage causes an unbalanced temporal and/or flavor profile. If the taste profile of high-potency sweeteners could be modified to impart desired taste characteristics, it could provide low calorie beverages and food products with taste characteristics more desirable for consumers.

Stevia extracts, comprising steviol glycosides, are known sweeteners. These are used in various products, including beverages and food. Some sweetened dairy products comprising stevia extracts are available on the market. Various steviol glycosides ingredients, with various compositions, are available on the market as extracts obtained from stevia plants, or as compounds synthetized by microbiological processes. The latter are also referred to as “fermentative stevia”. While these ingredients have been designed to efficiently deliver sweetness and attempt to reduce aftertaste, there is still a need for sweetened dairy compositions delivering a sugar-like character (overall character being close to sugar). Indeed, one can observe that various yogurts sweetened with some Stevia extracts fail to reach the sweetness level of sugar and perform less well in other aspects of sugar-sweetened yogurt.

Moreover, the sweetness equivalence (SE) of high intensity sweeteners such as Stevia extracts is often determined in water solutions (sometimes acidified with citric or phosphoric acid) and not in the food product, where the matrix might influence the sensorial perception of the actual sweetness.

For example, replacing only 25% of the sugar in 6-12% sucrose sweetened yogurt by an amount of Rebaudioside A predicted from SE values determined in water, already led to an increased bitterness and astringency [Hergesell L, Schöne F, Greiling A, Schäfer U, Jahreis G, 2014. Possibilities and limitations of sugar reduction by steviol glycosides in yogurt. Ernahrungs Umschau 61(12): 181–187]. While replacements of 50%, 75% and 100%, using well over 500 ppm of Rebaudioside A, led to significant reductions in sweetness intensity.

With an increasing percentage of Rebaudioside A added to yogurt in order to replace added sugar, the hardness and consistency of yogurt decreases [Yang X, Lu Y, Hu G. 2014. Optimization of sweetener formulation in sugar-free yogurt using response surface methodology, CyTA - Journal of Food, 12:2, 121-126].

In a strawberry flavored yogurt, the taste score of only Rebaudioside A (up to 300 ppm) was below sucrose or the Rebaudioside A/sucrose combination [Lisak K, Lenc M, Jeličić I, Božanić R. 2012. Sensory Evaluation of the Strawberry Flavored Yogurt with Stevia and Sucrose Addition. Croatian Journal of Food Technology, Biotechnology and Nutrition 7 (Special Issue) 39-43]

Adding fructooligosaccharides (inulin) to repair some of the flaws of Rebaudioside A additions to yogurt (reduced creaminess, lower yield stress and a negative off-flavour) are only partly successful and still have lower sweetness than the sucrose reference, as well as only a limited caloric reduction (inulin still has 1.5 kcal/g), uses high loads of Stevia extracts (250-400 ppm) and requires additional labeling [Guggisberg D, Piccinali P, Schreier K. 2011. Effects of sugar substitution with Stevia, Actilight and Stevia combinations or Palatinose on rheological and sensory characteristics of low-fat and whole milk set yogurt. International Dairy Journal 21:636-644]. Also here a lower dry matter was reported after addition of these high amounts of Rebaudioside A.

WO2012177727 concerns Stevia compositions that are said to provide a superior taste profile and can be used as sweetness enhancers, flavor enhancers and sweeteners in foods, beverages, cosmetics and pharmaceuticals. Example 14 compares Rebaudioside A/ Rebaudioside B blends with Rebaudioside A in non-fat yogurt to reduce added sugar. Using >600 ppm steviol equivalents, the inclusion of Rebaudioside A and Rebaudioside A/ Rebaudioside B blends led to enhanced acidity of the end product.

US20170181443 concerns a sweetened dairy product comprising a dairy material, at least one steviol glycoside, at least one additive selected from a polysaccharide of fructose units and a salt. However, still containing not only 150-359 ppm Rebaudioside A and 170-406 ppm Steviol Glycosides (with only <0.51 ppm Rebaudioside M), this solution also requires the addition of 46-75 g/l of fructooligosaccharides to obtain a "…sugar-like character with almost no artificial aftertaste…"

US20110091602 concerns yogurts with 800 ppm of Rebaudioside D but does not teach anything in comparison versus a full sugar sweetened yogurt.

US8524785 describes a 40% added sugar reduced yogurt (8% to 4.8%) requiring significant amounts of steviol equivalents (minimally 250 ppm) and the addition of other sweeteners (Magnasweet, NHDC or thaumatin) still not matching a full sugar sweetened yogurt (see example 3, pages 26-27).

In 2014 the sensory characteristics of Rebaudioside M were described [Prakash A, Markosyan A, Bunders C. 2014. Development of Next Generation Stevia Sweetener: Rebaudioside M. Foods 3:162-175]. Although being evaluated in yogurt, Rebaudioside M was described as having a "..bitter or licorice aftertaste…" and a limitation in use was suggested (see Abstract).

Therefore, there is a need in the art for a sweetened yogurt having a reduced amount of added sugar while maintaining the sweetness, texture and sensory attributes of fully sugar-sweetened yogurt.

Specifically, as there is no teaching in the prior art which Stevia extract to use and at which concentration to match the sweetness, texture and sensory attributes of fully sugar-sweetened yogurt, there is need in the art for a Stevia extracts sweetened yogurt having a reduced amount of added sugar while preventing the formation of off-flavours and maintaining the sweetness, texture and sensory attributes of fully sugar-sweetened yogurt.

Moreover, there is at the same time a need to minimize the number of additional additives in Stevia extracts sweetened yogurt (minimize labeling).

Furthermore, the prior art provides no clear teaching as to when to add high intensity sweetener, such as Stevia extracts, during the process of yogurt making. The above cited prior art either adds the used Stevia extracts before (Yang *et al*, 2014; Guggisberg et al, 2011; US20110091602) or after (Hergesell etal, 2014; Lisak et al, 2012; US20170181443; WO2012177727; US8524785). Acid conditions are reported to hydrolyse Stevia extracts including Rebaudioside M [Prakash I, Chaturvedula VS, Markosyan A. 2014. Structural characterization of the degradation products of a minor natural sweet diterpene glycoside Rebaudioside M under

acidic conditions. Int J Mol Sci. 14;15(1):1014-25]. Also microbial hydrolysis of Stevia extracts by bacteria is well documented [Renwick AG, Tarka SM. 2008. Microbial hydrolysis of steviol glycosides. Food Chem Toxicol. 46 Suppl 7:S70-4]. Stability of steviol glycosides in several food matrices was studied and the addition of Rebaudioside A to set yogurt was shown to be stable, while a blend of various steviol glycosides (SG formulation) shows some degradation in time [Jooken E, Amery R, Struyf T, Duquenne B, Geuns J, Meesschaert B. J Agric Food Chem. 2012 Oct 24;60(42):10606-12]. Therefore, it is highly surprising that the present invention provides for a Rebaudioside M sweetened yogurt, wherein the Rebaudioside M is added before the fermentation (i.e. the addition of the starter culture), while leading to a sugar-reduced sweetened yogurt maintaining the sweetness, texture and sensory attributes of fully sugar-sweetened yogurt.

Summary

The objective of the present invention, amongst other objectives, is to provide a yogurt having a reduced amount of added sugar while maintaining the sweetness, texture and sensory attributes of a fully sugar sweetened yogurt.

This objective, amongst other objectives, is met by providing a yogurt in which at least a part of any added sugar is replaced with rebaudioside M.

Specifically, this objective, amongst other objectives, is met by providing a yogurt comprising an amount of sugar from about 0% to about 10% (wt) and an amount of rebaudioside M of from about 15 to about 600 ppm.

According to another aspect, the present invention relates to a process for the production of a yogurt by adding a starter culture to the milk, while adding an amount of sugar of from about 0% to about 10% (wt) to the milk or the yogurt and adding an amount of rebaudioside M of from about 15 to about 600 ppm, preferably from about 25 to 600 ppm to the milk or to the yogurt, to provide the yogurt.

According to the invention, there is thus provided:

- a yogurt comprising rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably from about 25 ppm to about 600 ppm and an added sugar in an amount of from about 0% to about 10% (wt);
- a process for the preparation of a yogurt, which method comprises fermenting milk with a starter culture, wherein the resulting yogurt comprises rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably from about 25 ppm to about 600 ppm, and an added sugar in an amount of from about 0% to about 10% (wt);
- use of rebaudioside M in a yogurt to replace added sugar, wherein texture and/or flavour are maintained in comparison with a yogurt wherein added sugar is not replaced with rebaudioside M;
- use of rebaudioside M in a yogurt as the sole sweetener; and

- use of rebaudioside M in a yogurt in an effective amount to provide a sugar, such as sucrose, equivalence of at least about 1% (wt).

The term "milk" is intended to encompass milks from mammals and plant sources or mixtures thereof. Preferably, the milk is from a mammal source. Mammals sources of milk include, but are not limited to cow, sheep, goat, buffalo, camel, llama, mare and deer. In an embodiment, the milk is from a mammal selected from the group consisting of cow, sheep, goat, buffalo, camel, llama, mare and deer, and combinations thereof. Plant sources of milk include, but are not limited to, milk extracted from soy bean, pea, peanut, barley, rice, oat, quinoa, almond, cashew, coconut, hazelnut, hemp, sesame seed and sunflower seed. Soy bean milk is preferred. In addition, the term "milk" refers to not only whole milk, but also skim milk or any liquid component derived thereof.

As used in the present specification, the term "yogurt" refers to products comprising lactic acid bacteria such as *Streptococcus thermophilus* and *Lactobacillus delbruekii* subsp. *bulgaricus*, but also, optionally, other microorganisms such as *Lactobacillus delbruekii* subsp. *lactis*, *Bifidobacterium animalis* subsp. *lactis*, *Lactococcus lactis*, *Lactobacillus acidophilus* and *Lactobacillus casei*, or any microorganism derived therefrom. The lactic acid strains other than *Streptococcus thermophilus* and *Lactobacillus delbruekii* subsp. *bulgaricus*, are intended to give the finished product various properties, such as the property of promoting the equilibrium of the flora.

As used herein, the term "yogurt" encompasses set yogurt, stirred yogurt, drinking yogurt, Greek yogurt, Greek-style yogurt, Petit Suisse, fermented milk products, heat treated yogurt and yogurt-like products. Preferably, the yogurt is a stirred yogurt or a drinking yogurt. More preferably, the yogurt is a stirred yogurt. The term "yogurt" encompasses, but is not limited to, yogurt as defined according to French and European regulations, e.g. coagulated dairy products obtained by lactic acid fermentation by means of specific thermophilic lactic acid bacteria only (i.e. *Lactobacillus delbruekii* subsp. *bulgaricus* and *Streptococcus thermophilus*) which are cultured simultaneously and are found to be live in the final product in an amount of at least 10 million CFU (colony-forming unit) / g. Preferably, the yogurt is not heat-treated after fermentation. Yogurts may optionally contain added dairy raw materials (e.g. cream) or other ingredients such as sugar or sweetening agents, one or more flavouring(s), fruit, cereals, or nutritional substances, especially vitamins, minerals and fibers. Such yogurt advantageously meets the specifications for fermented milks and yogurts of the AFNOR NF 04-600 standard and/or the codex StanA-lla-1975 standard. In order to satisfy the AFNOR NF 04-600 standard, the product must not have been heated after fermentation and the dairy raw materials must represent a minimum of 70% (m/m) of the finished product.

In the context of the present invention sugar is a sweet-tasting, calorie containing, soluble carbohydrate digestible to humans. There are various types of sugar derived from different sources. Simple sugars are called monosaccharides and include glucose (also known as dextrose), fructose, and galactose. The "table sugar" or "granulated sugar" most customarily used

as food is sucrose, a disaccharide of glucose and fructose. Other disaccharides include maltose, lactose, etcetera.

In the context of the present invention a carbohydrate digestible to humans is either a monosaccharide which after ingestion by a human is absorbed by the small intestine or it is an oligo or polysaccharide which, after ingestion by a human, is degraded by digestive enzymes in the digestive system to yield monosaccharides which are subsequently absorbed by the small intestine.

In the context of the present invention, added sugar means a sugar as herein defined added as a separate ingredient to the yogurt or ingredients thereof. Therefore, added sugar is sugar that is added to food and beverages during their production (industrial processing). Sugar which is naturally present in the yogurt ingredients, is not considered as added sugar. An example of naturally present sugar is lactose in the milk base. Moreover, sugar derived from hydrolysis of lactose present in the yogurt ingredients, for example enzymatic hydrolysis by the enzyme lactase yielding glucose and galactose, is not considered as added sugar. Also, the sugar naturally present in plant sources which may be used as alternative to milk in the production of yogurt according to the invention e.g. coconut (sucrose, fructose, glucose) or soy (glucose, fructose, sucrose), is not considered as added sugar. Most typically added sugar is added sucrose, added glucose or added fructose.

Thus, a yogurt may comprise an amount of added sugar, for example an amount of added sucrose. However, if e.g. a yogurt comprises only lactose inherently present in the yogurt ingredient and/or galactose and glucose derived from lactose hydrolysis, such yogurt does not comprise added sugar,

A yogurt may be flavoured. Examples of a flavoured yogurt are vanilla, honey, toffee and fruit yogurts such as strawberry, cherry, blueberry, raspberry, mango and peach.

The term 'sweetener', as used herein, is intended to mean any compound capable of providing a sweet taste. The term 'non-sugar sweetener' as used herein means a sweetener which is not a sugar.

The term ‘Stevia extracts’, as used in the present context, is intended to mean a composition comprising one or more steviol glycosides, for example an extract derived from a plant source.

The term 'thickening agent' as used in the present context, is intended to mean a substance which increases the viscosity of the yogurt.

The term 'starter culture' or 'starter culture composition' (also referred to as 'starter') as used herein refers to a composition comprising one or more lactic acid bacteria, which are responsible for the acidification of the milk base. Starter cultures may be fresh (liquid), frozen or freeze-dried. Freeze dried cultures need to be regenerated before use. For the production of a fermented dairy product, the starter culture is usually added in an amount from 0.01 to 3%, preferably from 0.01 and 0.02 % by weight of the total amount of milk base.

As used herein, the term "lactic acid bacteria" (LAB) or "lactic bacteria" refers to food-grade bacteria producing lactic acid as the major metabolic end-product of carbohydrate

fermentation. These bacteria are related by their common metabolic and physiological characteristics and are usually Gram positive, low-GC, acid tolerant, non-sporulating, non-respiring, rod-shaped bacilli or cocci. During the fermentation stage, the consumption of lactose by these bacteria causes the formation of lactic acid, reducing the pH and leading to the formation of a protein coagulum. These bacteria are thus responsible for the acidification of milk and for the texture of the dairy product. As used herein, the term "lactic acid bacteria" or "lactic bacteria" encompasses, but is not limited to, bacteria belonging to the genus of *Lactobacillus* spp., *Bifidobacterium* spp., *Streptococcus* spp., *Lactococcus* spp., such as *Lactobacillus delbruekii* subsp. *bulgaricus*, *Streptococcus thermophilus*, *Lactobacillus lactis*, *Bifidobacterium animalis*, *Lactococcus lactis*, *Lactobacillus casei*, *Lactobacillus plantarum*, *Lactobacillus helveticus*, *Lactobacillus acidophilus* and *Bifidobacterium breve*. One or more lactic acid bacteria, as used in the present context, means one or more different lactic acid bacteria, meaning lactic acid bacteria of at least a different strain.

Lactic acid bacterial strain 'X', as used in the present context means the *Streptococcus thermophilus* strain as deposited under number CBS140561. Lactic acid bacterial strain ´Y', as used in the present context means the *Streptococcus thermophilus* strain as deposited under number CBS140558. Lactic acid bacterial strain 'Z', as used in the present context means the *Lactobacillus delbrueckii* ssp. bulgaricus strain as deposited under number CBS140562.

"Lactase" or "beta-galactosidase" (EC: 3.2.1.23) is an enzyme, which can convert lactose (disaccharide) into the monosaccharides glucose and galactose. Lactose is present in dairy products and more particularly in milk, skimmed milk, cream and other milk products. The lactase provided in the present invention is preferably produced by a yeast, more preferably a *Kluyveromyces* strain, most preferably *K. lactis* or *K. fragilis*.

The term “a similar yogurt” or “a comparable yogurt” as used herein is intended to mean a yogurt which is similar to the present yogurt in respect of recipe and fermentation conditions, however with the sole difference of the sugar content and/or Rebaudioside M content.

The term 'comparable' as used in the present context is intended to mean as having no significant differences, as perceived by a sensory panel and / or as measured by an analysis tool such as a viscometer or a rheometer.

The term ‘liquorice’ as used in the present context is intended to describe the typical aftertaste of several steviol glycosides. It means the same and can be interchangeably used with ‘licorice’.

Weight percentages, or abbreviated as % (wt), as used in the present context means the percentage in weight, of the total weight (w/w) of the total, i.e. total milk or total yogurt.

The term ‘ppm’ as used in the present context is intended to mean ‘parts per million’ on weight basis, i.e. ‘100 ppm’ means ‘100 parts per million’ or ‘100 mg per liter’ or ‘0.01% (wt)’.

Detailed description

Throughout the present specification and the accompanying claims, the words "comprise", "include" and "having" and variations such as "comprises", "comprising", "includes" and "including" are to be interpreted inclusively. That is, these words are intended to convey the possible inclusion of other elements or integers not specifically recited, where the context allows.

The articles "a" and "an" are used herein to refer to one or to more than one (i.e. to one or at least one) of the grammatical object of the article. By way of example, "an element" may mean one element or more than one element.

According to a first aspect, the present invention relates to a yogurt having an amount of added sugar of from about 0% to about 10% (wt) and an amount of Rebaudioside M of from about 15 to about 600 ppm, preferably about 25 to about 600 ppm. The inventors of the present invention found that Rebaudioside M is capable to compensate for the loss in sweetness as a result of reducing the amount of added sugar in yogurt, without inducing off-flavours. Surprisingly, the yogurt of the invention has sweetness related sensory attributes scoring comparable with yogurts having higher amounts of added sugar.

The present inventors found that the amount of added sugar can be reduced below 10% (wt) while maintaining a yogurt having the desired sensory properties. Therefore, the present amount of added sugar, is preferably about 9% (wt) or less, more preferably about 8% (wt) or less, even more preferably about 7% (wt) or less, more preferably about 6% (wt) or less such as about 5% (wt) or less, about 4% (wt) or less, about 3% (wt) or less or even about 2% (wt) or less or about 1% (wt) or less, most preferably 0% (wt). Preferably, the added sugar is sucrose.

In a preferred embodiment, the present yogurt has a sweetness which equals the sweetness of a similar sweetened yogurt having added sucrose in an amount of more than 1% (wt), more than 5% (wt) or more than 10% (wt). More preferably the present yogurt has a sweetness which equals the sweetness of a similar sweetened yogurt having added sucrose in an amount of 1 to 15% (wt), more preferably in an amount of 10 to 15% (wt) or in an amount of 5 to 10% (wt), such as an added sucrose amount of 7% (wt), or in an amount of 1 to 5% (wt), such as an added sucrose amount of 4% (wt). More preferably, the present yogurt has an amount of added sucrose of 2% (wt) or less, and a sweetness which equals the sweetness of a similar sweetened yogurt having an amount of added sucrose of 7% (wt). Most preferably, the present yogurt has an amount of added sucrose of 1% (wt) or less, which equals the sweetness of a similar sweetened yogurt having an amount of added sucrose of 4% (wt). Alternatively, the present yogurt has a sweetness, which equals the sweetness of a similar yogurt wherein the amount of added sucrose is not reduced.

That is to say a yogurt of the invention may comprise rebaudioside M in an effective amount to provide a sugar (e.g. sucrose) equivalence of at least about 1% (wt), at least about 2% (wt), at least about 3% (wt), at least about 4% (wt), at least about 5% (wt), at least about 6% (wt), at least about 7% (wt), at least about 8% (wt), at least about 9% (wt), at least about 10% (wt) or higher.

In a preferred embodiment, other consumer relevant attributes of the present yogurt like mouthfeel, creaminess, texture shininess, ropiness, thickness, smoothness, firmness, melting, astringency, sourness and and/or viscosity (in addition to sweetness) are equal to that of a similar sweetened yogurt wherein the amount of added sucrose is not reduced.

The present yogurt may comprise a lactase enzyme (EC 3.2.1.23) or lactase enzyme composition. The presence of a lactase enzyme may be advantageous in view of the sweetness of the yogurt, since lactase may add sweetness by hydrolysing lactose in glucose and galactose. Preferably, the present lactase enzyme or lactase enzyme composition does not have an invertase enzyme activity, or the present lactase enzyme or lactase enzyme composition does not comprise an invertase enzyme (EC 3.2.1.26). Preferably, the present lactase enzyme or lactase enzyme composition does not have an arylsulfatase enzyme activity, or the present lactase enzyme does not comprise an arylsulfatase (EC 3.1.6.1). The advantage of using a lactase enzyme without arylsulfatase enzyme activity is the prevention of off-flavour formation.

To meet the sweetness of a fully sugar sweetened yogurt, Rebaudioside M is present in the present yogurt. In a preferred embodiment, the amount of Rebaudioside M is within the range of from 0.0015% (wt) to 0.06% (wt) of the total weight of the yogurt or from 15 ppm to 600 ppm, or within the range of from 0.0025% (wt) to 0.06% (wt) of the total weight of the yogurt or from 25 ppm to 600 ppm. More preferably within the range of from 0.001 % (wt) to 0.015% (wt), or from 15 ppm to 150 ppm, or within the range of from 0.001 % (wt) to 0.025% (wt), or from 25 ppm to 150 ppm. More preferably, the amount of Rebaudioside M is within the range of from 0.0015 % (wt) to 0.02% (wt), or from 15 ppm to 200 ppm, or within the range of from 0.0025 % (wt) to 0.02% (wt), or from 25 ppm to 200 ppm. More preferably, the amount of Rebaudioside M is within the range of from 0.0015 % (wt) to 0.015% (wt), or from 15 ppm to 150 ppm, or within the range of from 0.0025 % (wt) to 0.015% (wt), or from 25 ppm to 150 ppm. More preferably, the amount of Rebaudioside M is within the range of from 0.0015 % (wt) to 0.01% (wt), or from 15 ppm to 100 ppm, within the range of from 0.0025 % (wt) to 0.01% (wt), or from 25 ppm to 100 ppm.

Rebaudioside M may be used to provide a complete replacement of added sugar, such as sucrose.

The Rebaudioside M for use in the present invention may be derived from a plant source, for example from a plant of the genus Stevia, such as a Stevia rebaudiana plant. Alternatively, a steviol glycoside may be one obtained via an enzymatic process, for example in a process whereby a UDP-glycosyltransferase contacted with a steviol or steviol glycoside substrate to generate Rebaudioside M. Alternatively, Rebaudioside M for use in the present invention may be produced by fermentation of a recombinant host cell which has been modified so that it is capable of production of Rebaudioside M. Suitable recombinant hosts are described in WO2015/007748 WO2016/146711, WO2016/151046 and WO2016/170045.

Rebaudioside M may be present in a yogurt of the invention as the sole or as substantially the sole sweetener (in terms of added sweeteners). That is to say, rebaudioside M may be present as the only or substantially the only added sweetener. In the context of the present invention, Rebaudioside M is present as the sole or substantially the sole sweetener when Reb

M is at least 90% (wt) of the total sweeteners added to the yogurt, preferably at least 91% (wt), at least 92% (wt), at least 93% (wt), at least 94% (wt), at least 95% (wt), at least 96% (wt), at least 97% (wt), at least 98% (wt), at least 99% (wt), or 100% (wt) of the total sweeteners added to the yogurt.

One or more other non-sugar sweeteners may be included in the present yogurt, such as a steviol glycoside other than rebaudioside M or a Stevia extract, a mogroside or Luo Han Guo extract, thaumatin, brazzein, mabinlin, monellin, monatin, pentadin, miraculin, curculin, neoculin, neohesperidin dihydrochalcone (NHDC), Phyllodulcin, glycyrrhizic acid and its salts, sucralose, acesulfame K, alitame, aspartame, cyclamate, erythritol, maltitol, mannitol, sorbitol, lactitol, xylitol, inositol, threitol, arabitol, isomalt, propylene glycol, glycerol, galactitol, hydrogenated isomaltulose, reduced isomalto-oligosaccharides, reduced xylo-oligosaccharides, reduced gentio-oligosaccharides, reduced maltose syrup, reduced glucose syrup, neotame, saccharin, tagatose, kojibiose, allose, allulose, psicose, palatinose, mannose, sorbose, inulin or fructooligosaccharide.

More preferably, the one or more other non-sugar sweetener is a second steviol glycoside (i.e. a steviol glycoside other than rebaudioside M) or a Stevia extract. The second steviol glycoside is preferably one or more of the steviol glycosides naturally present in the plant Stevia. The second steviol glysocide may be one or more of Steviolmonoside, Steviol-19-O-β-D-glucose, Rubusoside, Steviolbioside, Stevioside, Stevioside A, Rebaudioside B, Rebaudioside G, Rebaudioside G1, Stevioside B, Rebaudioside E, Rebaudioside A, Rebaudioside A2, Rebaudioside D, Rebaudioside I, Rebaudioside L, Rebaudioside L1, Rebaudioside Q2, Rebaudioside Q, Rebaudioside I2, Rebaudioside Q3, Rebaudioside I3, Rebaudioside IX, Dulcoside A, Dulcoside A1, Dulcoside B, Rebaudioside C, Rebaudioside S, Rebaudioside H, Rebaudioside H1, Rebaudioside K, Rebaudioside J, Rebaudioside N, Rebaudioside O, Stevioside F, Stevioside F1, Rebaudioside F, Rebaudioside F1, Rebaudioside F2, Rebaudioside F3, Rebaudioside T, Rebaudioside R, Rebaudioside R1, Stevioside D, Stevioside E. Alternatively, the steviol glycoside may be derived from an enzymatic conversion reactions, such as Rebaudioside Z1, Rebaudioside Z1, Rebaudioside V, Rebaudioside W, Rebaudioside D2, Rebaudioside M2, Rebaudioside D3 or Glycosylated Steviol Glycosides (GSG). The second steviol glycoside may be a combination of two or more steviol glycosides, for example a combination of at least rebaudioside A and rebaudioside D.

In a preferred embodiment, the amount of the one or more other non-sugar sweeteners is within the range of from 0.00001% (wt) to 10% (wt) of the total weight of the yogurt, preferably the amount of the one or more other non-sugar sweeteners is within the range of 0.00001% (wt) to 9% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 8% (wt), more preferably the amount of the one or more other non-sucrose sweeteners is within the range 0.00001% (wt) to 7% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 6% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 5% (wt), more preferably the amount of the one or more other non-sugar

sweeteners is within the range 0.00001% (wt) to 4% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 3% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 2% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 1% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 0.5% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 0.25% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 0.1% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 0.01% (wt), more preferably the amount of the one or more other non-sugar sweeteners is within the range 0.00001% (wt) to 0.01% (wt).

The rebaudioside M suitable for use in the present invention may be provided in the form of a composition comprising the rebaudioside M which is then used in the yogurt or process of the invention. A composition comprising the rebaudioside M may comprise at least about 50% by weight of the rebaudioside M, such as at least about 75% by weight of the rebaudioside M, preferably at least about 96% by weight of the rebaudioside M, preferably at least about 97% by weight of the rebaudioside M, such as at least about 98% by weight of the rebaudioside M or more. A composition comprising the rebaudioside M may comprise one or more second steviol glycosides.

A second steviol glycoside suitable for use in the present invention may be provided in the form of a composition comprising the second steviol glycoside which is then used in the yogurt or process of the invention. The second steviol glycoside may be one or more of Steviolmonoside, Steviol-19-O-β-D-glucose, Rubusoside, Steviolbioside, Stevioside, Stevioside A, Rebaudioside B, Rebaudioside G, Rebaudioside G1, Stevioside B, Rebaudioside E, Rebaudioside A, Rebaudioside A2, Rebaudioside D, Rebaudioside I, Rebaudioside L, Rebaudioside L1, Rebaudioside Q2, Rebaudioside Q, Rebaudioside I2, Rebaudioside Q3, Rebaudioside I3, Rebaudioside IX, Dulcoside A, Dulcoside A1, Dulcoside B, Rebaudioside C, Rebaudioside S, Rebaudioside H, Rebaudioside H1, Rebaudioside K, Rebaudioside J, Rebaudioside N, Rebaudioside O, Stevioside F, Stevioside F1, Rebaudioside F, Rebaudioside F1, Rebaudioside F2, Rebaudioside F3, Rebaudioside T, Rebaudioside R, Rebaudioside R1, Stevioside D, Stevioside E, Rebaudioside Z1, Rebaudioside Z1, Rebaudioside V, Rebaudioside W, Rebaudioside D2, Rebaudioside M2, Rebaudioside D3 or Glycosylated Steviol Glycosides (GSG). A composition comprising the second steviol glycoside may comprise at least about 50% by weight of the second steviol glycoside, such as at least about 75% by weight of the second steviol glycoside, preferably at least about 96% by weight of the second steviol glycoside, preferably at least about 97% by weight of the second steviol glycoside, such as at least about 98% by weight of the second steviol glycoside or more. A composition comprising the second steviol glycoside may comprise two or more steviol glycosides.

The present inventors found that the indicated amounts of non-sugar sweetener are able to repair the loss in sweetness without introducing off-flavours to the yogurt. For example,

rebaudioside M present in the indicated amounts provides sweetness without introducing a liquorice flavour to the yogurt. This is unexpected since steviol glycosides may introduce liquorice flavours. Therefore, the present amount of rebaudioside M is preferably suitable to provide sweetness without introducing a liquorice flavour to the yogurt.

According to another aspect, the present invention relates to a process for the production of a yogurt, comprising fermenting milk having an amount of sucrose, added sucrose or sugar, in an amount of from 0% to 10% (wt) with a starter culture to provide the yogurt, and comprising adding Rebaudioside M to the milk or the yogurt in the amount of from 15 ppm to 600 ppm, preferably from 25 ppm to 600 ppm. It has been found that the present process is able to compensate for the loss in sweetness resulting from reducing the amount of added sugar, or sucrose.

The Rebaudioside M is added to the present milk having an amount of sucrose, added sucrose or sugar between 0% and 10% (wt) or to the provided yogurt directly. If added to the milk the Rebaudioside M is present during fermentation. If added to the provided yogurt, the Rebaudioside M may be added to the provided yogurt directly or to a fruit or flavour preparation prior to its mixing with the provided yogurt. The Rebaudioside M may also be added during mixing of a fruit or flavor preparation with the provided yogurt.

The present milk having an amount sucrose or sugar between 0% and 10% (wt) preferably having an amount of sucrose or sugar of 9% (wt) or less, more preferably 8% (wt) or less, even more preferably 7% (wt) or less, more preferably 6% (wt) or less such as 5% (wt) or less, 4% (wt) or less, 3% (wt) or less or even 2% (wt) or less or 1 % (wt) or less, or 0%.

Preferably, the present process for the production of a yogurt is a process for the production of a yogurt having an amount of sucrose or sugar between 0% and 10% (wt), preferably an amount of sucrose or sugar of 9% (wt) or less, more preferably 8% (wt) or less, even more preferably 7% (wt) or less, more preferably 6% (wt) or less such as 5% (wt) or less, 4% (wt) or less, 3% (wt) or less or even 2% (wt) or less or 1 % (wt) or less, or 0% (wt).

The present step of fermenting milk having an amount of sugar or sucrose between 0% and 10% with a composition comprising a starter culture to provide the yogurt preferably comprises maintaining the milk at a fermentation temperature until the desired pH value in the range of 4.0 and 5.0, preferably a pH value in the range of 4.0 to 4.7 and more preferably in the range of 4.2 to 4.5 is reached (end of fermentation). The pH is preferably in the range of 4.2 - 5.0. The length of the fermentation period is not critical for the present invention and can be determined easily by the skilled person. The fermentation temperature may be in the range of 30°C-45°C, more preferably in the range of 37°C-42°C.

In a preferred embodiment, the present process further comprises a step of cooling the milk when a pH value in the range of 4.0 and 5.0 is reached and/or a step of packaging the provided yogurt. Preferably, the provided yogurt is packaged in a package having a volume of more than 50 ml, such as from 50 ml to 1 liter.

The starting material is typically comprised of milk and/or ingredients obtained from milk. It is also referred to as a “milk-based composition”. Herein milk encompasses animal milk, such

as cow's milk, and also substitutes to animal milk, such as vegan milk, such as soy milk, rice milk, coconut milk, almond milk etc. Milk-based compositions useful in such products and/or processes are known by the one skilled in the art of dairy products, preferably of fermented dairy products.

Herein a milk-based composition encompasses a composition with milk or milk fractions, and compositions obtained by mixing several previously separated milk fractions. Some water or some additives can be added to said milk, milk fractions and mixtures. Preferably the milk is an animal milk, for example cow's milk. Some alternative animal milks can be used, such as sheep milk or goat milk.

The milk-based composition can typically comprise ingredients selected from the group consisting of milk, half skimmed milk, skimmed milk, milk powder, skimmed milk powder, milk concentrate, skim milk concentrate, milk proteins, cream, buttermilk and mixtures thereof. Some water or additives can be mixed therewith. Examples of additives that can be added include sugar, sweeteners different from sugar, fibers, and texture modifiers.

The milk-based composition can typically have a fat content of from 0.0% to 5.0% by weight, for example of from 0.0% to 1.0% or from 1.0% to 2.0% or from 2.0% to 3.0% or from 3.0% to 4.0% or from 4.0% to 5.0%. The “fat content” of a composition corresponds to the weight of the fat components present in the composition relatively to the total weight of the composition. The fat content is expressed as a weight percentage.

The milk-based composition can typically have a protein content of from 2.0% to 10.0% by weight, or from 2.0% to 6.0%, for example of from 2.0% to 3.0% or from 3.0% to 4.0% or from 4.0% to 5.0% or from 5.0% to 6.0% or from 6.0% to 8.0% or from 8.0% to 10.0% by weight. The “protein content” of a composition corresponds to the weight of the proteins present in the composition relatively to the total weight of the composition. The protein content is expressed as a weight percentage.

The milk-based composition, can comprise lactose. The amount of lactose can be typically of from 3.80% to 5.00% by weight. Still, higher amounts of lactose (up to and higher than 8.0%) are included in the scope of the present invention, as increasing the protein content by adding for example skimmed milk powder to the milk base may lead to a concurrent increase in lactose.

In one embodiment the milk-based composition has the following contents (% by weight): from 3.0% to 3.5% of milk protein, from 0.0% to 3.5% of fat and from 3.80% to 5.00% of lactose.

In one embodiment the milk is a low-fat milk comprising less than 2.0% fat by weight, preferably less than 1.0% of fat, preferably less than 0.5% fat, preferably less than 0.1%, for example less than 0.01%. The milk can be for example a skimmed milk.

The present process may further comprises adding a lactase enzyme (EC 3.2.1 .23) composition to the milk having an amount of sugar or sucrose between 0% and 10% (wt) or to the provided yogurt. Preferably, the lactase enzyme is added to the present milk before or together with the present starter culture. Alternatively, the lactase enzyme is added during fermentation. Advantageously, lactose hydrolysis by the lactase enzyme and fermentation with the starter culture is carried out simultaneously. The advantage of adding a lactase enzyme is the hydrolysis

of lactose into glucose and galactose, both of which provide a stronger sweetness than lactose. The lactase enzyme is introduced in the process such that at least 10%, preferably at least 20%, preferably at least 30%, preferably at least 40%, preferably at least 50%, preferably at least 60%, preferably at least 70%, preferably at least 80%, preferably at least 90%, preferably 95% of lactose of the dairy material is degraded to glucose and galactose, preferably at pH above 5.0, preferably at a fermentation temperature. The lactase can be added in an amount of from 0.005 wt % to 0.20 wt %, in particular from 0.01 wt % to 0.15 wt %, preferably from 0.02 wt % to 0.06 wt %, based on the total weight of the dairy material.

In a further preferred embodiment, the present starter culture comprises one or more lactic acid bacterial strain selected from the group consisting of X, Y and Z. Preferably, the present starter culture comprises X and Y; X and Z; Y and Z; X, Y and Z. The combination of X, Y and Z is highly preferred. More preferably, the present starter culture comprises the combination of strain X (deposited as CBS140561), strain Y (deposited as CBS140558) and strain Z (deposited as CBS140562).

In a further preferred embodiment, the present starter cultures are for example commercial starter cultures like DELVO®FRESH YS-141, DELVO®FRESH YS-131, DELVO®FRESH YG-131, DELVO®FRESH MY-131, or DELVO®FRESH YS-241.

In a preferred embodiment, the yogurt of the invention has a mouthfeel thickness equal to a fully sucrose sweetened yogurt.

In another preferred embodiment, the yogurt of the invention has a creaminess equal to a fully sucrose sweetened yogurt.

In yet another preferred embodiment, the yogurt of the invention has a sour flavour equal to a fully sucrose sweetened yogurt.

In a further preferred embodiment, the yogurt of the invention has a no liquorice off-flavour, equal to a fully sucrose sweetened yogurt.

In yet another preferred embodiment, the sweetened yogurt of the invention has a shear stress and viscosity equal to a fully sucrose sweetened yogurt.

The starter culture may comprise the lactic acid bacterial strains X and Y; X and Z; Y and Z; X, Y and Z. The combination of X, Y and Z may be used.

In a preferred embodiment, the present invention relates to the use of rebaudioside M for providing texture, mouthfeel thickness and/or a creaminess in a yogurt having an amount of sugar, or sucrose, between 0% and 10% (wt), preferably an amount of sugar, or sucrose, of 9% (wt) or less, more preferably 8% (wt) or less, even more preferably 7% (wt) or less, more preferably 6% (wt) or less such as 5% (wt) or less, 4% (wt) or less, 3% (wt) or less or even 2% (wt) or less or 1 % (wt) or less, or 0%.

Embodiments:

1. A yogurt comprising rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably about 25 ppm to about 600 ppm, and an added sugar in an amount of from about 0% to about 10% (wt).

2. A yogurt according to embodiment 1 which comprises an added sugar in an amount of about 5% (wt) or less.

3. A yogurt according to embodiment 1, wherein the rebaudioside M is present in an effective amount to provide a sugar equivalence of at least about 1% (wt).

4. A yogurt according to any one of the preceding embodiments, wherein the pH of the yogurt is from about pH 4.0 to about pH 5.0.

5. A yogurt according to any one of the preceding embodiments which comprises a non-sugar sweetener in addition to rebaudioside M.

6. A yogurt according to embodiment 5, wherein the non-sugar sweetener is a steviol glycoside other than rebaudioside M.

7. A yogurt according to any one of embodiments 1 to 4, wherein rebaudioside M is the sole sweetener.

8. A yogurt according to any one of the preceding embodiments, wherein the yogurt comprises a lactase enzyme (EC 3.2.1.23).

9. A yogurt according to any one of the preceding embodiments which does not comprise an added thickening agent.

10. A process for the preparation of a yogurt, which method comprises fermenting milk with a starter culture, wherein the resulting yogurt comprises rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably from about 25 ppm to about 600 ppm, and an added sugar in an amount of from about 0% to about 10% (wt).

11. A process according to embodiment 9, wherein the milk and rebaudioside M are mixed before fermentation takes place.

12. Use of rebaudioside M in a yogurt to replace added sugar, wherein texture and/or flavour are maintained in comparison with a yogurt wherein added sugar is not replaced with rebaudioside M.

13. Use of rebaudioside M in a yogurt as the sole sweetener.

14. Use of rebaudioside M in a yogurt in an effective amount to provide a sugar equivalence of at least about 1% (wt).

A reference herein to a patent document or other matter which is given as prior art is not to be taken as an admission that that document or matter was known or that the information it contains was part of the common general knowledge as at the priority date of any of the claims.

The disclosure of each reference set forth herein is incorporated herein by reference in its entirety.

The present invention is further illustrated by the following Examples:

Examples

MATERIALS AND METHODS

1. Lactic acid bacteria and starter culture:

The lactic acid bacterial strains used in examples 1-3 are:

- X = CBS 140561 *Streptococcus thermophilus*
- Y = CBS 140558 *Streptococcus thermophilus*
- Z = CBS 140562 *Lactobacillus delbrueckii ssp. bulgaricus*

All cultures are deposited at the Centraalbureau voor Schimmelcultures (Fungal Biodiversity Centre), Uppsalalaan 8, 3584 CT Utrecht, The Netherlands under the provisions of the Budapest Treaty, on 29 September 2015: CBS140558, CBS140561, CBS140562.

The following lactic acid bacteria starter culture is used in examples 1-3:

Culture	**Strains**	**Bacteria**
XYZ	-X (49.5%) -Y (49.5%) -Z (1%)	*Streptococcus thermophilus* + *Lactobacillus delbrueckii ssp. Bulgaricus*

2. Lactase

The commercial product Maxilact® LGI 5000 (obtainable from DSM, The Netherlands containing 5000 NLU/g), was added to the milk alongside the starter culture at a rate of 5000 NLU per liter milk.

3. Steviol glycosides

Rebaudioside M or Rebaudioside A having a purity of 95% was added to the milk with a concentration of 0.1 gram/liter milk 0.11 gram/liter milk, respectively. Both rebaudioside M and rebaudioside A were fermentative products obtained as disclosed in WO2013/110673 and WO2016/170045.

4. Yogurt preparation

The milk composition used is obtained by supplementing pasteurized skimmed milk (Campina, The Netherlands) with skimmed milk powder and sucrose, leading to final concentrations of 4.2% protein, 1.5% fat and between 0% and 7% sucrose. The final recipe is described in the different examples. The milk mixture was homogenized in line (80 over 40 bar) and pasteurized at 92°C for 6 minutes. The pasteurized milk is cooled back to the fermentation temperature (42°C) and inoculated with the starter culture to be tested at 4 units per 1000 liter milk. If lactase was added, it was added to the milk together with the culture. Once a pH of 4.60 is reached, the yogurt is smoothened using a back-pressure valve set at a back pressure of 0.75 bar on water and cooled to 22°C. The yogurt is then filled out into suitable containers. The yogurt cups are then stored at 4°C until sensory analysis.

5. Sensory analysis

Descriptive sensory analysis was done by using the Quantitative Descriptive Analysis Method (Stone, H. and Sidel, J.L. "Sensory Evaluation Practices" 3rd edition, 2004). First, the panelists developed a list of attributes including definitions by means of evaluating a wide variety of references and a wide array of yogurts. Secondly, training sessions were organized to enable panelists to learn to consistently differentiate and replicate the yogurt samples. During the actual QDA measurements the intensities of the selected attributes were obtained per product by the FIZZ (Biosystems; France) sensory data acquisition system, using unstructured line scales ranging from 0 - 100. The products were offered semi-monadically and evaluated twice by the panelists (n=14) by means of a Balanced Incomplete Block design to avoid sequence effects (each panelist received 5 out of the 6 products per replicate). Statistical analysis of the data was done by analysis of variance with Fisher's least significant difference (LSD) as a post hoc test (SenPaq).

6. Viscosity Measurement

The viscosity of the yogurts was determined with a Brookfield Viscometer. Viscosity measurement were performed using a Brookfield RVDVII+ Viscometer, which allows viscosity measurement on an undisturbed product (directly in the pot). The Brookfield Viscometer determines viscosity by measuring the force required to turn the spindle into the product at a given rate. The Helipath system with a T-C spindle was used as it is designed for non-flowing thixotropic material (gels, cream). It slowly lowers or raises a rotating T-bar spindle into the sample so that not always the same region of the sample is sheared (helical path). Thus, the viscometer measures constantly the viscosity in fresh material, and is thus thought to be the most suitable for measuring stirred yogurt viscosity. A speed of 30 rpm was used for 31 measuring points, at an interval of 3 sec. The average of the values between 60 and 90 seconds are reported.

Example 1: Yogurt with 0% added sucrose and 100 ppm Rebaudioside M

Yogurt was made according to the method described in the Materials and Methods. Three different recipes sweetened yogurts were prepared:

- A: one with added sucrose in the amount of 4% (wt),
- B: one with 100 ppm Rebaudioside M,
- C: one with 110 ppm Rebaudioside A.

Subsequently, on day 7 after the fermentation, all yogurts were subjected to a sensory analysis. The results of the sensory analysis are shown in Table 1 below.

Table 1. Sensory evaluations of sweetened yogurts

	Yogurt					
	A		B		C	
	+4% SUCROSE		+100 ppm REB-M		+110 ppm REB-A	
Sensory attribute	score	significance	score	significance	score	significance
sweet-fl	40	b	39	b	31	c
sweet-onset-fl	43	bc	48	b	35	c
sweet-at	32	b	30	b	24	c
creamy-mf	41	a	41	a	34	b
intensity-fl	39	b	40	b	37	b
sour-fl	27	a	29	a	28	a
bitter-at	8	ab	8	ab	10	a
astringent-af	28	a	30	a	30	a
fat coating-af	24	a	23	a	22	a
viscosity-mf	45	ab	45	ab	40	b
melting-mf	50	a	49	a	53	a

In Table 1, different letters indicate statistically significant differences between the different samples for that specific sensory attribute. The following abbreviations are used: fl = flavour, at = aftertaste, mf = mouthfeel, af = afterflavour.

Surprisingly, the data in table 1 illustrates that replacing added sucrose with Rebaudioside M leads to sweetened yogurts with equal sweetness as the sucrose-sweetened yogurt without any apparent off-flavours. In this example, the invention shows a 100% sugar reduction sweetened yogurt, with 0% added sucrose.

Example 2: Sweetened yogurt at 2% added sucrose and 100 ppm Rebaudioside M

Yogurt was made according to the method described in the Materials and Methods. Three different recipes sweetened yogurts were prepared:

- D: one with added sucrose in the amount of 7% (wt),
- E: one with added sucrose in the amount of 2% (wt), 100 ppm Rebaudioside M and Maxilact® LGI in the amount of 5000 NLU/L
- F: one with added sucrose in the amount of 2% (wt), 110 ppm Rebaudioside A and Maxilact® LGI in the amount of 5000 NLU/L

Subsequently, on day 7 after the fermentation, all yogurts were subjected to a sensory analysis. The results of the sensory analysis are shown in Table 2 below.

Table 2. Sensory evaluations of sweetened yogurts

	Yogurt					
	D		E		F	
Sensory attribute	+7% SUCROSE		+2% SUCROSE +100 ppm REB-M +Maxilact		+2% SUCROSE +110 ppm REB-A +Maxilact	
Sensory attribute	score	significance	score	significance	score	significance
sweet-fl	52	a	53	a	44	b
sweet-onset-fl	61	a	57	a	45	b
sweet-at	39	a	42	a	33	b
creamy-mf	43	a	42	a	40	a
intensity-fl	46	a	46	a	42	ab
sour-fl	25	a	27	a	27	a
bitter-at	7	b	7	ab	8	ab
astringent-af	26	a	29	a	28	a
fat coating-af	21	a	22	a	23	a
viscosity-mf	43	ab	45	ab	48	a
melting-mf	52	a	50	a	50	a

In Table 2, different letters indicate statistically significant differences between the different samples for that specific sensory attribute. The following abbreviations are used: fl = flavour, at = aftertaste, mf = mouthfeel, af = afterflavour.

Surprisingly, the data in table 2 illustrates that replacing added sucrose with Rebaudioside M leads to sweetened yogurts with equal sweetness as the sucrose-sweetened yogurt without any apparent off-flavours. In this example, the invention shows a 73% sugar reduction sweetened yogurt.

Example 3: Viscosity of sweetened yogurt with reduced sucrose and 100 ppm Rebaudioside M

The viscosity of the sweetened yogurts of examples 1 and 2 was determined using the Brookfield Viscometer as described in Materials and Methods. The results of the sensory analysis are shown in table 3 below.

Table 3. Brookfield Viscosity of the sweetened yogurts

Sweetened Yogurt	Recipe	Brookfield viscosity (mPa/s)
A	+4% sucrose	4328 ± 74
B	+100 ppm Rebaudioside M	4652 ± 200
C	+110 ppm Rebaudioside A	4009 ± 69
D	+7% sucrose	4280 ± 83
E	+2% sucrose, 100 ppm Rebaudioside M, 5000 NLU/L Maxilact	4308 ± 185
F	+2% sucrose, 110 ppm Rebaudioside A, 5000 NLU/L Maxilact	4569 ± 92

Surprisingly, the data in table 5 illustrates that replacing sucrose with Rebaudioside M hardly affected the Brookfield viscosity of the sweetened yogurts.

Example 4: Sweetened yogurt with reduced sugar, containing Rebaudioside M and modified starch.

As first step in the production of yogurts G – L pasteurized semi-skimmed milk (Private label, Plus Supermarket, The Netherlands) with pasteurized full fat milk (Plus Supermarket, The Netherlands), skimmed milk powder were mixed, subsequently sucrose and/or Thermtex modified starch (Ingredion) to the final concentrations outlined in Table 4. The milk bases for yogurts G – L were homogenised in-line (80 over 40 bar) and pasteurized at 92 °C for 6 minutes. The pasteurized milk mix was cooled to 42 °C and inoculated at a rate of 4U/1000L with the starter cultures indicated in Table 4. If Maxilact®LGi was added, it was added directly after inoculation using the dosages outlined in Table 4. The fermentation was performed at 42 °C in a water bath until a pH of 4.60 was reached. The yogurts were smoothened using a back-pressure valve set at a back pressure of 1 bar on yogurt and cooled to 22 °C before filling out in cups.

Products G - I were collected in a container prior to manually mixing in Rebaudioside M in the amounts indicated in table 4. The containers were stored at 4 °C overnight, manually mixed again and filled out in cups. The yogurt cups were stored at 4 °C. The three different recipes sweetened yogurts (G - I) were prepared with each of the starter cultures (DELVO®FRESH YS-

131, YS-141 and YS-241), leading to 9 different yogurts in total, all of them containing 3.6% protein, 1.5% fat and 0.75% modified starch (Thermtex®):

- G: with added sucrose in the amount of 8% (wt)
- H: with added sucrose in the amount of 5.6% (wt), 40 ppm Rebaudioside M and Maxilact® LGI in the amount of 2000 NLU/L
- I: with added sucrose in the amount of 2.4% (wt), 150 ppm Rebaudioside M and Maxilact® LGi in the amount of 2000 NLU/L

Subsequently, on day 7 after the fermentation, all yogurts were subjected to a sensory analysis. The results of the sensory analysis are shown in Tables 5, 6 and 7 below.

Table 4. Overview relevant ingredient concentrations yogurts examples 4-6

Yogurt code	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**
Protein (%)	3.6	3.6	3.6	3.6	3.6	3.6	10	10	10
Fat (%)	1.5	1.5	1.5	1.5	1.5	1.5	0.1	0.1	0.1
Sucrose (%)	8	5.6	2.4				6	4.2	1.8
Thermtex® (%)	0.75	0.75	0.75	0.75	0.75	0.75			
Rebaudioside M (ppm)		40	150	400	400	400		15	60
Maxilact®LGi (NLU/L)		2000	2000	2000	2000	2000			
Fruit prep[1] (%)					10				
Sweetness enhancer[2] (%)						0.25			
Starter culture	DELVO®FRESH YS-141 DELVO®FRESH YS-131 DELVO®FRESH YS-241			DELVO®FRESH MY-131			DELVO®FRESH YG-131		

[1]Strawberry fruit preparation without added sugar was obtained from Energy food ingredients B.V.

[2]The sweetness enhancer (20420361) was obtained from Kerry.

Table 5. Sensory evaluation of sweetened yogurts.

Starter culture	**DELVO®FRESH YS-141**					
Yogurt code	**G-i**		**H-i**		**I-i**	
Sweeteners	**+ 8% sucrose**		**+ 5.6% sucrose + 40 ppm Rebaudioside M + Maxilact®LGi**		**+ 2.4% sucrose + 150 ppm Rebaudioside M + Maxilact®LGi**	
	Score	**Signifi-cance**	**Score**	**significance**	**Score**	**Signifi-cance**
sweet-fl	57	a	58	a	57	a
creamy-mf	56	a	58	a	47	a
intensity-fl	50	a	51	a	52	a
sour-fl	25	a	28	a	28	a
bitter-at	4	a	5	a	8	a
astringent-af	31	a	29	a	34	a
viscosity-mf	40	a	42	a	44	a
melting-mf	41	a	44	a	47	a

Table 6. Sensory evaluation of sweetened yogurts.

Starter culture	**DELVO®FRESH YS-131**					
Yogurt code	**G-ii**		**H-ii**		**I-ii**	
Sweeteners	**+ 8% sucrose**		**+ 5.6% sucrose + 40 ppm Rebaudioside M + Maxilact®LGi**		**+ 2.4% sucrose + 150 ppm Rebaudioside M + Maxilact®LGi**	
	Score	**Signifi-cance**	**Score**	**significance**	**Score**	**Signifi-cance**
sweet-fl	56	a	59	a	54	a
creamy-mf	52	a	53	a	52	a
intensity-fl	48	a	51	a	48	a
sour-fl	27	a	26	a	28	a
bitter-at	6	a	6	a	7	a
astringent-af	32	a	31	a	35	a
viscosity-mf	45	a	45	a	46	a
melting-mf	43	a	46	a	45	a

Table 7 Sensory evaluation of sweetened yogurts

Starter culture	**DELVO®FRESH YS-241**					
Yogurt code	**G-iii**		**H-iii**		**I-iii**	
Sweeteners	**+ 8% sucrose**		**+ 5.6% sucrose + 40 ppm Rebaudioside M + Maxilact®LGi**		**+ 2.4% sucrose + 150 ppm Rebaudioside M + Maxilact®LGi**	
	Score	**Signifi-cance**	**Score**	**Significance**	**Score**	**Signify-cance**
sweet-fl	53	a	56	a	51	a
creamy-mf	48	a	52	a	48	a
intensity-fl	49	a	48	a	47	a
sour-fl	33	a	32	a	34	a
bitter-at	5	a	5	a	5	a
astringent-af	33	a	35	a	34	a
viscosity-mf	38	a	42	a	39	a
melting-mf	41	a	43	a	44	a

In Tables 5, 6 and 7, different letters indicate statistically significant differences between the different samples for that specific sensory attribute. The following abbreviations are used: fl = flavour, at = aftertaste, mf = mouthfeel, af = afterflavour.

Surprisingly, the data in Tables 5, 6 and 7 illustrates that replacing added sucrose with Rebaudioside M in products containing modified starch, leads to sweetened yogurts with equal sweetness as the sucrose-sweetened yogurt without any apparent off-flavours. In this example, the invention shows sweetened yogurts with 30 or 70% sugar reduction, respectively.

The strain cultures used in the examples 4 to 6 are indicated in Tab. 8.

Table 8: strain cultures used in examples 4 to 6

Strain or culture	**Species composition**	**Obtainable from**
DELVO®FRESH YS-141	*Streptococcus thermophilus Lactobacillus delbrueckii subsp. bulgaricus*	DSM Food Specialties BV, Delft, the Netherlands
DELVO®FRESH YG-131	*Streptococcus thermophilus Lactobacillus delbrueckii subsp. bulgaricus*	
DELVO®FRESH MY-131	*Streptococcus thermophilus Lactobacillus acidophilus*	
DELVO®FRESH YS-241	*Streptococcus thermophilus Lactobacillus delbrueckii subsp. bulgaricus*	

Strain or culture	Species composition	Obtainable from
DELVO®FRESH YS-131	*Streptococcus thermophilus* *Lactobacillus delbrueckii subsp. bulgaricus*	

Example 5: Sweetened yogurt without added sugar containing Rebaudioside M and starch.

Yogurt was made according to the method described in the Materials and Methods with the starter cultures DELVO®FRESH YS-141 and MY-131. Three different recipes sweetened yogurts were prepared with each starter culture leading to 6 different yogurt samples, all of them containing 3.6% protein, 1.5% fat and 0.75% modified starch (Thermtex®):

- J: with 400 ppm Rebaudioside M and Maxilact® LGI in the amount of 2000 NLU/L
- K: with 400 ppm Rebaudioside M and Maxilact® LGI in the amount of 2000 NLU/L, containing 10% (wt) of strawberry fruit preparation without added sugar
- L: with 400 ppm Rebaudioside M and Maxilact® LGI in the amount of 2000 NLU/L, containing 0.25% (wt) of sweetness enhancer

Subsequently, on day 7 after the fermentation, sensory analysis was performed by expert tasting. Surprisingly, the products containing strawberry fruit preparation were perceived as sweet and well-balanced, while no added sugar was present. In this example, the invention shows a 100% sugar reduction sweetened yogurt, with 0% added sucrose.

Example 6: Sweetened Greek yogurt with reduced sugar, containing Rebaudioside M and Maxilact®LGi.

Greek yogurt was made from raw milk, which was skimmed at 55 °C and pasteurized at 76 °C for 15s. Heat treatment was performed for 5 in at 95 °C. The thus obtained skimmed milk (3.6% protein) was fermented with DELVO®FRESH YG-131 at an inoculation rate of 4U/1000L, and a temperature of 42 °C until pH 4.6 was reached. One batch was prepared as such, and one with 2000 NLU/l Maxilact®LGi added during inoculation. The white mass was concentrated by centrifugation using a KNA-3 separator (GEA Westfalia) with a feed of 520 l/h and a back pressure at the whey outlet of 2 bar to target approximately 10% protein. Sucrose syrup was prepared by dissolving 2500 g of sucrose in 1000 g of water at 85 °C. Sucrose syrup, water and/or Rebaudioside M were manually mixed with the white mass to target the sucrose and Rebaudioside M levels outlined in Table 4, resulting in products M – O, each containing 10% protein and 0.1% fat.

Three different recipes sweetened yogurts were prepared:

- M: with added sucrose in the amount of 6% (wt)
- N: with added sucrose in the amount of 4.2% (wt), 15 ppm Rebaudioside M and Maxilact® LGI in the amount of 2000 NLU/L
- O: with added sucrose in the amount of 1.8% (wt), 60 ppm Rebaudioside M and Maxilact® LGI in the amount of 2000 NLU/L

Subsequently, on day 7 after the fermentation, all yogurts were subjected to a sensory analysis. The results of the sensory analysis are shown in Table 9 below.

Table 9 Sensory evaluation of sweetened Greek yogurt.

Starter culture	**DELVO®FRESH YG-131**					
Yogurt code	**M**		**N**		**O**	
Sweeteners	**+ 8% sucrose**		**+ 5.6% sucrose + 40 ppm Rebaudioside M + Maxilact®LGi**		**+ 2.4% sucrose + 150 ppm Rebaudioside M + Maxilact®LGi**	
	Score	**Signify-cance**	**Score**	**Signify-cance**	**Score**	**Signifi-cance**
sweet-fl	46	a	48	A	47	a
creamy-mf	42	a	41	A	40	a
intensity-fl	48	a	45	A	45	a
sour-fl	35	a	37	A	36	a
bitter-at	11	a	12	A	12	a
astringent-af	40	a	41	A	44	a
viscosity-mf	54	a	54	A	52	a
melting-mf	41	a	42	A	42	a

In Table 8, different letters indicate statistically significant differences between the different samples for that specific sensory attribute. The following abbreviations are used: fl = flavour, at = aftertaste, mf = mouthfeel, af = afterflavour.

Surprisingly, the data in table 9 illustrates that replacing added sucrose with Rebaudioside M in Greek yogurt, leads to sweetened yogurts with equal sweetness as the sucrose-sweetened yogurt without any apparent off-flavours. In this example, the invention shows sweetened yogurts with 30 or 70% sugar reduction, respectively.

Applicant's or agent's file reference number **32558-WO-PCT**	International application No.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description first mentioned on page 7 line 15.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet [X]

Name of depositary institution

CENTRAAL BUREAU VOOR SCHIMMELCULTURES

Address of depositary institution *(including postal code and country)*
Uppsalalaan 8
P.O. Box 85167
NL-3508 AD Utrecht
The Netherlands

Date of deposit 29 September 2015	Accession Number CBS140561

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet [ ]

We inform you that the availability of the microorganism identified above, referred to Rule 13bis PCT, shall be effected only by issue of a sample to an expert nominated by the requester until the publication of the mention of grant of the national patent or, where applicable, for twenty years from the date of filing if the application has been refused, withdrawn or deemed to be withdrawn.

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only

[X] This sheet was received with the international application

Authorized officer

Kuiper-Cristina, Nathalie

For International Bureau use only

[ ] This sheet was received by the International Bureau on:

Authorized officer

Form PCT/RO/134 (July 1992)

Applicant's or agent's file reference number **32558-WO-PCT**	International application No.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description
first mentioned on page 7 line 17

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet [X]

Name of depositary institution

CENTRAAL BUREAU VOOR SCHIMMELCULTURES

Address of depositary institution *(including postal code and country)*
Uppsalalaan 8
P.O. Box 85167
NL-3508 AD Utrecht
The Netherlands

Date of deposit 29 September 2015	Accession Number CBS140558

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet [ ]

We inform you that the availability of the microorganism identified above, referred to Rule 13bis PCT, shall be effected only by issue of a sample to an expert nominated by the requester until the publication of the mention of grant of the national patent or, where applicable, for twenty years from the date of filing if the application has been refused, withdrawn or deemed to be withdrawn.

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only

[X] This sheet was received with the international application

Authorized officer

Kuiper-Cristina, Nathalie

For International Bureau use only

[ ] This sheet was received by the International Bureau on:

Authorized officer

Form PCT/RO/134 (July 1992)

Applicant's or agent's file reference number **32558-WO-PCT**	International application No.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13*bis*)

A. The indications made below relate to the microorganism referred to in the description
first mentioned on page 7 line 18

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☐

Name of depositary institution

CENTRAAL BUREAU VOOR SCHIMMELCULTURES

Address of depositary institution *(including postal code and country)*
Uppsalalaan 8
P.O. Box 85167
NL-3508 AD Utrecht
The Netherlands

Date of deposit 29 September 2015	Accession Number CBS140562

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

We inform you that the availability of the microorganism identified above, referred to Rule 13bis PCT, shall be effected only by issue of a sample to an expert nominated by the requester until the publication of the mention of grant of the national patent or, where applicable, for twenty years from the date of filing if the application has been refused, withdrawn or deemed to be withdrawn.

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the International Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only

☒ This sheet was received with the international application

Authorized officer

Kuiper-Cristina, Nathalie

For International Bureau use only

☐ This sheet was received by the International Bureau on:

Authorized officer

Form PCT/RO/134 (July 1992)

CLAIMS

1. A yogurt comprising rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably from about 25 ppm to about 600 ppm, and an added sugar in an amount of from about 0% to about 10% (wt).

2. A yogurt according to claim 1 which comprises an added sugar in an amount of about 5% (wt) or less.

3. A yogurt according to claim 1, wherein the rebaudioside M is present in an effective amount to provide a sugar equivalence of at least about 1% (wt).

4. A yogurt according to any one of the preceding claims, wherein the pH of the yogurt is from about pH 4.0 to about pH 5.0.

5. A yogurt according to any one of the preceding claims which comprises a non-sugar sweetener in addition to rebaudioside M.

6. A yogurt according to claim 5, wherein the non-sugar sweetener is a further steviol glycoside.

7. A yogurt according to any one of claims 1 to 4, wherein rebaudioside M is the sole sweetener.

8. A yogurt according to any one of the preceding claims, wherein the yogurt comprises a lactase enzyme (EC 3.2.1.23).

9. A yogurt according to any one of the preceding claims which does not comprise an added thickening agent.

10. A process for the preparation of a yogurt, which method comprises fermenting milk with a starter culture, wherein the resulting yogurt comprises rebaudioside M in an amount of from about 15 ppm to about 600 ppm, preferably from about 25 ppm to about 600 ppm, and an added sugar in an amount of from about 0% to about 10% (wt).

11. A process according to claim 9, wherein the milk and rebaudioside M are mixed before fermentation takes place.

12. Use of rebaudioside M in a yogurt to replace added sugar, wherein texture and/or flavour are maintained in comparison with a yogurt wherein added sugar is not replaced with rebaudioside M.

13. Use of rebaudioside M in a yogurt as the sole sweetener.

14. Use of rebaudioside M in a yogurt in an effective amount to provide a sugar equivalence of at least about 1% (wt).

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/072664

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23C9/13 A23C11/10 A23L27/30
ADD.

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)
A23C A23L

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)

EPO-Internal, FSTA, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PRAKASH A; MARKOSYAN A; BUNDERS C.: "Development of Next Generation Stevia Sweetener: Rebaudioside", M. FOODS, vol. 3, 2014, pages 162-175, XP055309887, cited in the application	1-14
Y	the whole document	1-11,14

X	WO 2017/068017 A1 (DSM IP ASSETS BV [NL]) 27 April 2017 (2017-04-27)	1-14
Y	page 5, line 35 - page 16, line 25; claims 1-16; examples 1-3	1-11,14

X	WO 2017/053980 A1 (THE COCA-COLA COMPANY [US]) 30 March 2017 (2017-03-30) page 2, line 21 - page 14, line 7 page 68, line 26 - page 72, line 21 claims 1-26	1,3-6, 10,12,14

	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 September 2018	05/10/2018

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Krajewski, Doris

1

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2016/034942 A1 (PURECIRCLE USA INC [US]) 10 March 2016 (2016-03-10) pages 54-57 pages 61-64; claims 1-6; examples 1-6	1-5,7, 10-12,14
Y	Anonymous: "Gras Assessment of Rebaudioside M", Internet , 9 August 2016 (2016-08-09), pages 1-153, XP002775116, Retrieved from the Internet: URL:https://www.fda.gov/downloads/food/ingredientspackaginglabeling/gras/noticeinventory/ucm524575.pdf [retrieved on 2017-12-07] pages 9,23-32 pages 114-118	1-14
Y	YANG X; LU Y; HU G.: "Optimization of sweetener formulation in sugar-free yoghurt using response surface methodology", CYTA - JOURNAL OF FOOD, vol. re12, no. 2, 2014, pages 121-126, XP002776466, cited in the application the whole document	1-14
A	US 2015/017284 A1 (PRAKASH INDRA [US] ET AL) 15 January 2015 (2015-01-15) paragraphs [0007] - [0298] paragraphs [0557] - [0570]	1-14
A	ETIENNE JOOKEN ET AL: "Stability of Steviol Glycosides in Several Food Matrices", JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY, vol. 60, no. 42, 24 October 2012 (2012-10-24), pages 10606-10612, XP055414615, ISSN: 0021-8561, DOI: 10.1021/jf302261j the whole document	1-14
A	LISAK K; LENC M; JELICIC I; BOZANIC R.: "Sensory Evaluation of the Strawberry Flavored Yoghurt with Stevia and Sucrose Addition", CROATIAN JOURNAL OF FOOD TECHNOLOGY, BIOTECHNOLOGY AND NUTRITION, vol. 7, 2012, pages 39-43, XP002776467, cited in the application the whole document	1-14

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2018/072664

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2017068017 A1	27-04-2017	EP 3364766 A1	29-08-2018
		WO 2017068017 A1	27-04-2017
WO 2017053980 A1	30-03-2017	AU 2016325712 A1	19-04-2018
		CA 2999767 A1	30-03-2017
		CN 108289485 A	17-07-2018
		EP 3340805 A1	04-07-2018
		WO 2017053980 A1	30-03-2017
WO 2016034942 A1	10-03-2016	BR 112017004238 A2	12-12-2017
		BR 112017004240 A2	12-12-2017
		CN 107072237 A	18-08-2017
		CN 107105686 A	29-08-2017
		EP 3188604 A1	12-07-2017
		EP 3189065 A1	12-07-2017
		US 2016058052 A1	03-03-2016
		US 2017283449 A1	05-10-2017
		US 2018070553 A1	15-03-2018
		US 2018237465 A1	23-08-2018
		WO 2016034942 A1	10-03-2016
		WO 2016036578 A1	10-03-2016
US 2015017284 A1	15-01-2015	BR 112016000591 A2	21-11-2017
		CA 2918063 A1	15-01-2015
		CN 105722533 A	29-06-2016
		EP 3019198 A1	18-05-2016
		RU 2016103391 A	17-08-2017
		US 2015017284 A1	15-01-2015
		US 2017172191 A1	22-06-2017
		WO 2015006764 A1	15-01-2015