The present invention relates to provide healthy sugar and process for preparation of same. The healthy sugar is with low calorie which can be used in the routine recipe. The healthy sugar of the present invention comprises water soluble inert core coated with the composition of coating comprises stevia extract.
FIELD OF THE INVENTION

The present invention relates to Healthy Sugar with low calorie and process for preparation of the same.

BACKGROUND OF THE INVENTION

The common sugar used in foodstuff delivers a primary taste of sweetness. Apart from that there are many forms of sugar and of sugar-containing foodstuffs. Non-sugar-based sweeteners also exist and these-are particularly used by the people who have problems with their normal blood sugar level i.e. known as diabetics having high blood sugar level, and people who wish to limit their calorie-intake while still enjoying sweet foods. There are both types of sugar natural and synthetic substitutes exist with no significant carbohydrate and thus low-calorie content for instance stevia (natural), and saccharin (synthetic).

Though saccharin is low-calorie but it is not clear to use the same for health and hence not used in routine.
Stevia is a natural sugar, 40 - 300 times sweeter than that of routine sugar and hence is normally used for low-sugar food alternatives. Stevia is also having a negligible effect on blood sugar and hence it is attractive as a natural sweetener to people to control and replace sugar diets.
Stevia is also used as medicinal sugar for treating diabetes, heartburn, obesity, hypertension and other illness.

Rebaudioside A, is extracted from stevia is having zero-calorie sweetener. The crystallized rebaudioside is used as sweetener for the patients to control the sugar diet.

There are many formulations of sweetener like pellets, powder, tablets etc. are available to use in the diabetes treatment mainly made of rebaudioside.
But these formulations are bitter in taste initially as direct taste of stevia or its extract in the mouth and hence these cannot be taken as such.

US6461659 discloses particulate sweetener composition with low-calorie comprises a terpene glycoside component; a sugar alcohol component; and a terpene glycoside carrier component. The said composition, a terpene glycoside carrier component is used to coat sub-particles of fructose component.

Not being specific for fructose and even with use of routine sugar along with minimizing the bitterness of stevia or its extract the present invention provides routine sugar coated with a composition comprising stevia extract to reduce the risk of diabetes.

US20090017185 discloses stevia extract containing 85-97% of rebaudioside A to all steviol glycosides.

But this also practiced at our laboratory level and we find it bitter which cannot be used as such in as table sugar. To over come this and make this healthy sugar for open use the present invention prepared sugar free of bitterness generated due to stevia.

OBJECTS OF THE INVENTION

The main object of the present invention is to provide healthy sugar with low calorie which can be used in the routine recipe.

Another object of the present invention is to coat the sugar with a composition comprising stevia extract.

Still another object of the present invention is to minimization of bitterness in the coating due to stevia.
Still another object of the invention is to provide stevia sweetener free of bitterness.

Still another object of the present invention is to provide a process for preparation of the healthy sugar.

SUMMARY OF THE INVENTION

The present invention relates to provide healthy sugar with low calorie which can be used in the routine recipe. The healthy sugar of the present invention free of bitterness of stevia comprises water soluble inert core which is coated with the composition of coating comprises stevia extract and sodium chloride.

The composition of coating comprises stevia extract wherein bitterness in coat due to stevia is minimized.

The sugar of the present invention can replace the routine sugar. The sugar of the present invention can also be used in the routine recipe like bakery items which adorn with the sugar crystals.

DETAIL DESCRIPTION OF THE INVENTION

Stevia is widely known stevia rebaudiana A which is one type of glycosides and familiar for its sweet leaves. Stevia rebaudiana A is much sweeter or lower bitter than rebaudiana B and C. Stevia rebaudiana A is having bitter taste at initial but can be used as sugar substitute. It tastes sweet for longer and also gives freshness feelings hence can be used in the preparation of lozenges and soft drinks.

The healthy sugar of the present invention is sweetener with low calorie which can be used in the routine recipe. The healthy sugar of the present invention comprises water
soluble inert core which is coated with a composition comprises stevia extract wherein >80% of stevia extract is rebaudioside A.

Addition of 0.25 - 4% of sodium chloride in solution containing stevia extract surprisingly make the sugar of the present invention free of bitterness which is common due to stevia. The solution of stevia can also be flavored by adding any flavoring agent in the solution. The sugar of the present invention is five times sweeter than the routine sugar. To make healthy sugar of the present invention free of bitterness addition of 0.25 - 4% of sodium chloride in stevia extract is essential.

Further, in healthy sugar of the present invention, a solution containing stevia and stevia along with sodium chloride is not necessary to coat on any water soluble inert material but can also be directly granulated or dried by any convention way to prepare powder or granules or compress the same to form cubes.

The sugar of the present invention can replace the routine sugar and can be used in the routine recipe like bakery items which adorn with the sugar crystals. The healthy sugar of the present invention is healthy sugar as it reduces the risk of diabetes, useful in the prevention and treatment of obesity and high blood pressure.

As per the present invention composition of healthy sugar comprises the 3-4% stevia extract which comprises >80% of rebaudioside A and 60-95% water soluble inert core. Addition of 0.25 - 4% of sodium chloride with the stevia extract is preferable to make sugar of the present invention free of bitterness due to stevia. Use of sodium salt mixed stevia composition in other drinks like tea, coffee, juice and the like do not given feeling of sugar replacement.

Water soluble inert core can be selected from but not limited to lactose, mannitol, sorbitol, erithritol, routine sugar or mixture thereof. The inert core is coated by the coating composition comprising stevia extract or along with sodium chloride through fluid bed processor. If inert core is coated with only stevia extract then to avoid steiva's
initial bitter taste it is further coated with routine sugar coat or other taste mask. Other taste mask can be of any flavor. In the other taste mask table salt can be also be used. Sodium chloride (preferably Table salt) coating will give the sugar a salty taste but bitterness will be completely removed upon dissolving in any solution or sucking in mouth. Stevia extract or along with sodium chloride can be used in preparation of lozenges and soft drinks. It gives cool and freshness feelings upon drinking juice, soft drink or sucking the cube or lozenges.

Throughout this specification and the appended claims it is to be understood that the words "comprise" and "include" and variations such as "comprises", "comprising", "includes", "including" are to be interpreted inclusively, unless the context requires otherwise. That is, the use of these words may imply the inclusion of an element or elements not specifically recited.

Example
The present invention has been described by way of example only, and it is to be recognized that modifications thereto falling within the scope and spirit of the appended claims, and which would be obvious to a person skilled in the art based upon the disclosure herein, are also considered to be included within the scope of this invention.

The above said invention can be illustrated by but not limited to following example(s).

Example - 1

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/ 104mg</td>
</tr>
<tr>
<td>Sugar</td>
<td>97</td>
</tr>
<tr>
<td><strong>Coating on Sugar</strong></td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>3</td>
</tr>
<tr>
<td>Stevia glycoside (Rebaudioside A)</td>
<td>4</td>
</tr>
<tr>
<td>Purified Water</td>
<td>Qs</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
</tr>
</tbody>
</table>
Procedure:

1) Weigh all the ingredients accurately
2) Load Sugar in Fluid Bed processor.
3) Dissolve sugar & Stevia glycosides (Rebaudioside A) in purified water under stirring.
4) Start sugar particle coating by using step 3 solutions in FBP by bottom spray.
5) Dry the sugar particle after completion of coating.

Example - 2

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Qty mg/104mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>70</td>
</tr>
<tr>
<td><strong>Layer 1</strong></td>
<td></td>
</tr>
<tr>
<td>Sugar for coating</td>
<td>15</td>
</tr>
<tr>
<td>Stevia glycoside (Rebaudioside A)</td>
<td>4</td>
</tr>
<tr>
<td>Purified Water</td>
<td>Qs</td>
</tr>
<tr>
<td><strong>Layer 2</strong></td>
<td></td>
</tr>
<tr>
<td>Sugar for coating</td>
<td>15</td>
</tr>
<tr>
<td>Purified water</td>
<td>Qs</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>104</strong></td>
</tr>
</tbody>
</table>

Procedure:

1) Weigh all the ingredients accurately
2) Load Sugar in Fluid Bed processor.
3) Dissolve sugar & Stevia glycoside (Rebaudioside A) of layer 1 in purified water under stirring.
4) Start sugar particle coating by using step 3 solutions in FBP by bottom spray.
5) Dry the sugar particle after completion of coating.
6) Dissolve sugar of layer 2 in purified water & start particle coating of step 5.
7) Dry the sugar particle after coating.

Example - 3

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/ 104mg</td>
</tr>
<tr>
<td>Sugar</td>
<td>97</td>
</tr>
<tr>
<td>Coating on Sugar</td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>2</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>1</td>
</tr>
<tr>
<td>Stevia glycoside (Rebaudioside A)</td>
<td>4</td>
</tr>
<tr>
<td>Purified Water</td>
<td>Qs</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
</tr>
</tbody>
</table>

Procedure:

1) Weigh all the ingredients accurately
2) Load Sugar in Fluid Bed processor.
3) Dissolve sugar, Sodium chloride & Stevia glycoside (Rebaudioside A) in purified water under stirring.
4) Start sugar particle coating by using step 3 solutions in FBP by bottom spray.
5) Dry the sugar particle after completion of coating.
6) To make flavored further coating is done using flavoring agent
Fluid Bed processor parameter

<table>
<thead>
<tr>
<th>Spray Pattern</th>
<th>Bottom spray</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet Temp</td>
<td>45 ± 2 °C</td>
</tr>
<tr>
<td>Product Temp</td>
<td>40 ± 2 °C</td>
</tr>
<tr>
<td>Outlet temp</td>
<td>39 ± 2 °C</td>
</tr>
<tr>
<td>Spray Rate</td>
<td>1 to 2</td>
</tr>
<tr>
<td>Atomization pressure</td>
<td>1 bar</td>
</tr>
</tbody>
</table>

The healthy sugar of the present invention is five times sweeter and provide low calorie than the routine sugar. Comparison between these is shown as under:

For routine Sugar

1 Table spoon full = 12.5 gm normal sugar
1 gm normal sugar = 4 Calorie
So 12.5 gm normal sugar = 50 Calorie

For our formulation (Healthy sugar) is 5 times more sweetener than normal sugar

So Sweetness of 1 table spoon full normal sugar = Sweetness of 1/5 table spoon full of our formulation.

1/5 Table spoon full = 2.5 gm
104 gm Healthy sugar contain 100 gm normal sugar
So 2.5 gm Healthy sugar contain 2.4 gm Normal sugar

So Sweetness of 1 Table spoon full normal sugar = Sweetness of 1/5 Table Spoon full of healthy sugar = 2.4 gm normal sugar = 9.6 Calorie.
Conclusion:
Sweetness of 12.5 gm normal sugar = Sweetness of 2.5 gm Healthy sugar, and thereby reduction in calorie intake is five times less and regular burning of energy remain same but calorie intake reduced which in turn reduce storage of calorie inside the body and thereby reduce obesity.
We Claim:

1. Healthy sugar with low calorie and five times sweeter than routine sugar, can be used in the routine recipe wherein water soluble inert core is coated with the composition of coating comprises stevia extract having \( \geq 80\% \) of stevia extract is rebaudioside A.

2. Healthy sugar with low calorie and five times sweeter than routine sugar completely free of bitterness of stevia essentially consisting of sodium chloride and stevia extract having \( \geq 80\% \) of stevia extract is rebaudioside A.

3. Healthy sugar as claimed in claim 2, wherein sodium chloride is in the range of 0.25 to 4%.

4. Healthy sugar as claimed in claim 1 and 2, comprises 60-95% water soluble inert core and 3-4% stevia extract.

5. Healthy sugar as claimed in claim 1, wherein water soluble inert core is lactose, mannitol, sorbitol, erithritol, routine sugar or mixture thereof.

6. Healthy sugar as claimed in claim 1, wherein the composition comprises routine sugar, sodium chloride, stevia extract and water used for coating the water soluble inert core or dried, granulated and prepared a cube.

7. Healthy sugar as claimed in claim 1, stevia coated composition is further coated with routine sugar coat or other taste mask.

8. Healthy sugar as claimed in claim 1 and 5, wherein coating is done by fluid bed processor.
9. Healthy sugar as claimed in claim 1, wherein the said composition is used in the prevention and treatment of obesity, to reduce risk of diabetes, treatment of high blood pressure.

10. Healthy sugar and process for preparation of same as herein described with foregoing description and example.