

Food Modification Method and Composition Therefor

TECHNICAL FIELD

5 The present invention relates to a method and composition for the modification of the characteristics of foodstuffs. In particular, the present invention is concerned with the modification of certain foodstuffs such that they are effective in reducing the effects of diabetes and in the treatment of the disease.

BACKGROUND ART

10 Diabetes is a disorder of carbohydrate metabolism resulting from insufficient production of or reduced sensitivity of the body to insulin. Insulin, a hormone produced by the pancreas, regulates the amount of glucose made available to cells in mammals for the purpose of producing energy that allows the cells to function.

15 In the case of those suffering from one form of diabetes, known as Type I, the pancreas produces insufficient levels of insulin, or in some cases, none at all. Consequently insulin must be injected into the body of the diabetic from an external source to allow glucose in the blood to enter the cells.

In many cases there is an abundance of glucose in the body, however, the cells are starved of energy because of a lack of insulin they cannot access the glucose.

20 In other forms of diabetes, known as Type II, the pancreas produces insulin but in insufficient quantity to reduce the high levels of sugar in the blood. The causes of Type II diabetes is largely attributed to diet. Sugar intake is too high and the availability of insulin to process the sugar into a usable form is insufficient.

25 There are existing treatments for diabetes. Many use preparations containing hypoglycemic remedies generally from the class of sulphonylureas, and from the group of biguanides. These preparations have been found to have undesirable side effects and it is recommended that they should not be used by pregnant or nursing mothers. These preparations also only treat the symptoms of the problems arising from diabetes and do little to address the
30 cause, namely inappropriate dietary intake, particularly high sugar and simple carbohydrate intake.

This invention discloses a method of modifying food products and a composition for use in food modification which enables a consumer to regulate a high blood sugar concentration thereby contributing to a reduction in the cause of diabetes over a period of time assisting in the reactivation and repair of functions responsible for secretion of insulin.

DISCLOSURE OF THE INVENTION

Therefore, according to a first aspect of the invention there is provided a composition suitable for modification of food products, said composition including an extract of wild buck wheat and wild mulberry leaves.

10 Preferably, the composition is an extract formed from an initial composition having from 60-80% wild buck wheat shells and from 40-20% wild mulberry leaves.

The buckwheat would normally be sourced from areas free of toxic contamination. In developing countries the buckwheat is cultivated using organic processes with no unnatural chemical ingredients or pesticides being used.

15 In more developing countries the buckwheat may be sourced from within the native vegetation, again no harmful or additional chemicals are used in its cultivation or harvesting.

Similar sourcing of the mulberry leaves would also involve using organically cultivated or wild plants.

20 Preferably, the composition is an extract formed by subjecting a mixture of wild buck wheat shells and wild mulberry leaves in water to a boiling process and to a subsequent reflux in ethanol.

The composition of the invention may be added as a liquid extract to wild buck wheat to form a porridge. Alternatively, the composition may be added as a liquid extract to dried and ground wild buck wheat, to produce a flour which is the suitable for use in the manufacture of flour based products, such as noodle, biscuits, dough based products and biscuits.

25 Preferably, porridge made from wild buck wheat and the composition of the present invention comprises 60% wild buck wheat shells and 40% wild mulberry leaves.

Preferably, a noodle made from the composition of the present invention comprises 80% wild buck wheat shells and 20 % wild mulberry leaves.

According to a further aspect of the present invention there is provided a process for the production of a modified food product comprising the steps of:

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(a) producing a water based extract of wild buck wheat shells and wild mulberry leaves;

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(b) subjecting the extract produced in step (a) to reflux in ethanol to produce a composition for inclusion into food products thereby creating a modified food product.

Preferably, the process defined above the extract formed in step (a) uses an initial composition having from 60-80% wild buck wheat shells and from 40-20% wild mulberry leaves.

BEST MODE FOR CARRYING OUT THE INVENTION

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A. Composition of the Invention

Step 1: Grind away shells of wild buck wheat, rinse with clean water. When washed put it together with wild mulberry leaves in a pot, then add well water. The quantity of material used at the outset is 8 times the original material, cook for 60 minutes, then filter it.

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Step 2: Add five fold well water into the dregs obtained from Step 1, cook for a further 30 minutes, filter, then mix the two liquids obtained from step 1 and step 2 to produce a water based extract of wild mulberry leaves and wild buck wheat shells.

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Step 3: Remove the impurities from the two materials, take five fold original materials, use 70% ethanol to extract twice through reflux. Use threefold ethanol to extract through reflux for 60 minutes first, and then use two fold ethanol to extract through reflux for 30 minutes. Mix the extracts from the two reflux to produce a composition for subsequent inclusion into foodstuff.

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B. A porridge including the composition of the invention

- Sieve away the impurities from deshelled wild buck wheat, rinse with well water, let the water permeate away, pour into a pot, add the composition from step 3 above, cook for 40-60 minutes till the temperature reaches
5 100°C when the porridge is cooked and became a product.

C. A Noodle including the composition of the invention

- Sieve away the impurities from the deshelled wild buck wheat, rinse with well water, let the water permeate away, put in a plate, then dry it over a small fire. Grind the dried wild buck wheat into very fine flour.
- 10 Add the composition from step 3 above into the flour, stir, mingle it into dough's, and then roll back and forth with a rolling pin till the dough's become tough, can form noodles by hand-pulling, take shape, and can be cut into slices and become a product.

D. Biscuits including the composition of the invention

- 15 Into a finely ground flour produced as for the noodle product above, add white soybean powder, yeast, proteinase, stir with "sugar inhibited juice", mingle it into doughs, till the doughs become tough.
- Then drag the doughs into many same size portions, and roll the portions into biscuit bases.
- 20 Daub the designated flavouring ingredient tea fruit oil onto a shallow pot or a biscuit making mould, then use small fire to bake the biscuit bases till they become light yellow and resilient biscuits.

E. Tea fruit oil for use in the food products of the invention

- 25 Manufactured by a process that includes the steps of rinsing mulberry leaves with water and there after allowing the water to permeate away; adding mulberry leaves to a vessel, and heating to a temperature exceeding 100°C for a duration of time that ends upon a release of fragrance from the mulberry leaves.
- Thereafter the mulberry leaves are transferred into a bamboo strip plate exposed to streams of flowing air, to thereby cause a temperature drop of at least 30°C.
- 30 The leaves are sequentially kneaded with an applied force proportional to the drop of its temperature for a period in the range of ten to fifteen minutes.

The kneaded leaves are then left to continue to dry to at least 45°C, then removed and subjected to a mechanical dehydration process at 60 C for a duration of thirty minutes that includes intervals where the leaves are turned over, where thereafter the leaves are allowed to cool before packaging.

- 5 The invention also provides for the addition of flavouring ingredients that includes tea fruit oil, papaya alcohol soya sauce, autumn halite and mountainous mushrooms. The addition of tea fruit oil flavouring ingredients to the porridge, noodle, biscuits or tea provides for extra nutritional benefits and the clinical testing of the hundred cases of the diabetic volunteers concludes that long term consumption
10 of the tea fruit oil brightens the eyes, rejuvenates the hair, moistens the lungs, strengthens the spleen and regulates the stomach. It also lowers blood fats and cholesterol, prevents and supplements the treatment of hypertension, arteriosclerosis, coronary heart disease and pulmonary tuberculosis.

- 15 F. Tea oil for use in combination with food products modified by the composition

A process that provides for the preparation of tea oil which includes the steps of shelling, drying, rolling into bases, wet frying and pressing and subsequently in succession subjecting the material to dephosphorizing, acid separation, decolorization, deodorization and dewaxing.

- 20 The shelling process uses specially selected tea oilseeds, which are shelled with a round plate shelling machine.

The drying process involves heating gradually to a standard that avoids over-cooking or under-cooking.

- 25 The process of rolling into bases includes crushing, softening and rolling. Crushing is to obtain oilseeds suitable for rolling from granules. Softening allows the oilseeds to possess appropriate resilience by regulating temperature and water content in the oilseeds. The heating temperature is adjusted according to the amount of water content in the oilseeds; if the water content is higher, the softening temperature becomes lower. Rolling is done to break the cellular tissues in the
30 oilseeds, so as to increase the speed and rate of oil extraction during pressing.

The process of wet frying uses direct steaming method, so that the water content in the oilseeds is 13-15%; during base steaming, the base material's temperature is raised to 95-100°C, the time of moisturising and base steaming is about 50-60

min.; the function of frying bases is to heat the oilseeds to expel water. During frying, the temperature of the ingredients produced approximately 105-110°C, and the water content is in the range between 5 and 8%.

The process of pressing is to obtain coarse oil with the spiral pressing machine.

- 5 Dephosphorisation uses intermittent high temperature hydration to heat up the filtered coarse oil and hydrating with boiling water. End temperature is controlled at 90-95°C, the volume of water added is 3 - 3.5 times the content of phosphorous. Under the conditions of high temperature and high water volume, phosphatide will expand and coagulate after absorbing a lot of water, and then separate through precipitation. Dephosphorised oil is obtained after heating and dehydrating the hydrated oil from the separation.

- 10 Acid separation uses intermittent high temperature and light alkalisation to inject and dephosphorised oil into cans. The alkaline amount and alkaline liquid density are determined according to the oil acidity value. The alkaline liquid is injected once only, the mixing speed is 60-70 r/min, and the mixing time is 40-50 min. After neutralisation reaction is completed, the speed is decreased to 30 r/min, mixing is continued for at least a further 10 minutes. After sapon granules coagulate, a steamer rapidly increases the temperature to 90-95°C and mixing speeds increased. When the sapon granules have significantly precipitated, stop mixing, keep warm during precipitation and separation. Separated oil is drawn into the washing can and wash with soft water at least twice, where the temperatures of the oil and water are not lower than 85°C, the volume of water added is 10-15% of oil volume, mix until the oil and water are evenly mixed. Precipitate, and dry again to obtain acid separated oil.

- 25 Decolorisation technology draws the oil into the decolouring can, and applying steam and mixing at the same time to carry out deoxidation and dehydration. The temperature of the oil is 85-90°C, pressure is 26-6.6 kpa, and the vacuum is maintained for about 30 minutes. Add in absorbant 2%-5% of the oil volume after drying. After adding in the absorbant, maintain absolute pressure at 2.6 - 4 kpa, temperature at 90-100°C; maintain at the highest temperature for about 20 minutes, and when dynamic equilibrium is reached, cool the oil down to below 70°C for filtering.

- 35 Deodorisation uses intermittent deodorisation technology to draw oil into the deodorising can, where the oil volume is about 60% the capacity of the deodorising can. Turn on the steam jet pump, and when the temperature is raised

to 100°C, inject pressure to 300-400 kpa. The steam will enable the oil in the can to seethe effectively. When temperature reaches 220-240°C, turn off the direct steam when the deodorisation reaches stipulated time (2.5 - 4 r). Press and filter the deodorised oil after the temperatue is reduced through a cooler to below 70°C.

- 5 Dewaxing has the oil and wax separated by applying the freezing crystallisation filtering method twice. The temperature during the first crystallisation filtering is controlled at 25°C, filtering pressure is maintained at 290-340 kpa, the temperature of the separated oil is lowered to below 20°C. The second filtering is carried out after crystallisation.

- 10 The end product oil is filled into bottles, labelled, packaged and put in storage.

G. Papaya alcohol as a flavouring ingredient for products modified by the composition

The addition of papaya alcohol soy sauce as a flavouring ingredient to porridge, noodles, biscuits and tea provides for additional nutritional benefits in the fight against diabetes.

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A process for the manufacture of papaya alcohol soya sauce includes the step, subsequent to mixing papaya alcohol with yeast, of bringing together papaya alcohol with brown rice wine in a vessel for a duration of at least ten days.

H. Autumn Halite as a flavouring ingredient for products modified by the composition

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Autumn halite is also an additional ingredient which can be used for extra nutritional value. Autumn halite added to the porridge and noodle containing the composition of the present invention and consumed by diabetes patients, plays an active roll of health caring and recuperation.

- 25 Autumn halite may be manufactured by drawing water from a source within the earth, pouring the drawn water into a vessel and subjecting it to continual heating until all moisture has been removed where thereafter the remaining material is extracted.

- I. Mountainous mushrooms as a flavouring ingredient for products modified by the composition

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The invention also provides for further flavouring ingredient for the porridge, noodle, biscuit or tea of mountainous mushrooms. A mushroom, sourced from areas in the range of 600 to 800 meters above sea level characterised in containing an edible fungus that is high protein, low fat, no non-natural chemicals and includes vitamins,
5 and two linoleic acids that provide for nutritional treatment against diabetes.

The consumption of the mushroom is beneficial to strengthen health and supplement the ailing immune system. It enhances the natural and most active anti-oxidant and de-toxifying abilities of the cell. Its nutritional value is higher than that of other edible fungi. It also contains active elements, acting on kidneys deficiency,
10 lowers infant fevers and reduces occurrences of bed wetting.

A diet of porridge, noodle and biscuits containing the composition of the present invention as described hereinabove, along with tea containing mulberry leaves extract as well as the additional flavouring ingredients provide for an overall nutritional treatment against diabetes.

15 This treatment became the diet for 100 diabetic volunteers that included 52 males and 48 females ranging in ages from 25 to 73. After two to three months of nutritional treatment based largely on the diet the inventor concludes diabetes is an illness caused by an imbalance of insulin secretion and sugar metabolism disorder. Diabetics suffer from increasing blood sugar and urinary sugar, decrease in
20 immunity, are prone to infections, as well as complications of thrombus, phlebitis, coronary heart disease, nephrosis and nervous system diseases that all bring great pain.

By using the series of products including porridge, noodles, biscuits, tea and additional flavouring ingredients it was found that this diet contained the amino acids, trace elements, vitamins and unsaturated fatty acids needed by the human body.
25 The diet also contained two linoleic acids which are particularly beneficial in the recovering of damaged nerve endings and are directly responsible for reactivating, inducing and repairing the insulin beta cells normal function of secreting insulin, and increasing human tissue cells utilisation rate of insulin.



CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A composition suitable for modification of food products, said composition including an extract of wild buck wheat shells and wild mulberry leaves.
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2. A composition according to claim 1, wherein the composition is an extract formed from an initial composition having from 60-80% wild buck wheat shells and from 40-20% wild mulberry leaves.
3. A composition according to claim 1 or claim 2, wherein, the composition is an extract formed by subjecting a mixture of wild buck wheat shells and wild mulberry leaves in water to a boiling process and to a subsequent reflux in ethanol.
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4. A composition according to any one of the preceding claims wherein the composition is added as a liquid extract to wild buck wheat to form a porridge.
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5. A composition according to claim 4, wherein the composition takes the form of a porridge made from wild buck wheat, the composition comprising 60% wild buck wheat shells and 40% wild mulberry leaves.
6. A composition according to any one of claims 1-3, wherein the composition is added as a liquid extract to dried and ground wild buck wheat, to produce a flour which is the suitable for use in the manufacture of flour based products, such as noodle, biscuits, dough based products and dough based biscuits.
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7. A composition according to claim 6, wherein the composition takes the form of a noodle made comprising 80% wild buck wheat shells and 20 % wild mulberry leaves.
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8. A process for the production of a modified food product comprising the steps of:
 - (a) producing a water based extract of wild buck wheat shells and wild mulberry leaves;
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(b) subjecting the extract produced in step (a) to reflux in ethanol to produce a composition for inclusion into food products thereby creating a modified food product.

5 9. A process according to claim 8, wherein the extract formed in step (a) uses an initial composition having from 60-80% wild buck wheat shells and from 40-20% wild mulberry leaves.

10. A composition as defined in any one of claims 1-9, further including a tea fruit oil.

10 11. A composition according to claim 11, wherein the tea fruit oil is produced by rinsing mulberry leaves with water and thereafter heating the leaves to a temperature exceeding 100°C until release of fragrance from the mulberry leaves; exposing the leaves to streams of flowing air, to induce a temperature drop of at least 30°C; the leaves kneaded for a period in the range of ten to fifteen minutes; leaving the kneaded leaves to continue to dry
15 to at least 45°C; thereafter subjecting the leaves to a mechanical dehydration process at 60°C for a duration of thirty minutes that includes intervals where the leaves are turned over, where thereafter the leaves are allowed to cool before packaging.

20 12. A composition as defined in any one of claims 1-9, further including tea oil produced from mountainous tea fruit seeds, said method consisting of applying high pressurized steam onto the tea fruit seeds that are then baked and pressed for removal of course oil and subsequently in succession subjected to dephosphorizing, acid separation, decolouring in a refiner, then filtration with the dregs thereafter deodorized in a refiner with separation of oil
25 and wax applied by freezing crystallisation filtering.

30 13. A composition as defined in any one of claims 1-9, further including said papaya alcohol soya being prepared by mixing papaya alcohol with yeast, of bringing together papaya alcohol with brown rice wine in a vessel for a duration of at least ten days having means for the vessels contents to be agitated at intervals.

14. A composition as defined in any one of claims 1-9, further including autumn halite, said autumn halite being prepared by drawing water from a source within the earth, of pouring water into a vessel and subjecting it to



continual heating until all moisture has been removed where thereafter the remaining material is extracted and sieved of particulate impurities.

- 5 15. A composition as defined in any one of claims 1-9, further including mushrooms sourced from areas in the range of 600 to 800 meters above sea level characterised in containing an edible fungus that is high protein, low fat, no non-natural chemicals and includes vitamins, and two linoleic acids that provide for nutritional treatment against diabetes.