

FORM 2

THE PATENTS ACT, 1970 (39 of 1970) & THE PATENTS RULES, 2003

COMPLETE SPECIFICATION

(See section 10 and rule 13)

METHOD OF MANUFACTURING EDIBLE CUTLERY

APPLICANTS:

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The following specification particularly describes the disclosure and the manner in which is to be performed.

METHOD OF MANUFACTURING EDIBLE CUTLERY

FIELD OF INVENTION

[0001] Embodiments of a present disclosure relates to a novel method of making eco-friendly and biodegradable utensils and more particularly to a method of manufacturing edible cutlery.

BACKGROUND

[0002] Plastic contains several chemical complexes that leach into food. Use of plastic will lead to carcinogenic and neuro-toxic problems. Edible cutlery contrarily is hundred percent natural and complete baked products. Edible cutlery will disintegrate within less than a week, so in no way will affect the environment. Moreover, edible cutlery is made of food materials and they come with nutritive contents.

[0003] In one approach, process of manufacturing of edible cutlery involves grinding of solid ingredients into the form of powder, mixing the powder form with liquid substance, rolling the mixture in form sheet and lastly the rolled mixture undergoes baking process to control and to provide solid desired shape. More efficient approach would be to involve a pressure application process when the baked product is placed in mould. Pressing the prepared dough mixture will be pressured to give a particular shape to the cutlery while it is baked. Moreover, the presence of particular types of seeds, roots and the like as ingredients would give additional nutrition.

[0004] Hence, there is a need for an improved method of manufacturing edible cutlery and therefore addressing the aforementioned issues.

BRIEF DESCRIPTION

[0005] In accordance with one embodiment of the disclosure, a method of manufacturing edible cutlery is provided. The method includes grinding a plurality of solid ingredients in form of a powder. The method also includes mixing the powder with at least one of a 45-75 percentage weight of flour, a 30-60 percentage weight of water and a 1-5 percentage weight of oil to form a dough mixture. The method also includes rolling of the dough mixture into one or more sheets. The method also includes compacting the one or more sheets by placing on one or more moulds of

cutlery while applying a pre-determined pressure. The method also includes baking one or more compact sheets at a pre-determined temperature for a pre-determined duration to obtain the edible cutlery.

[0006] To further clarify the advantages and features of the present disclosure, a more particular description of the disclosure will follow by reference to specific embodiments thereof, which are illustrated in the appended figures. It is to be appreciated that these figures depict only typical embodiments of the disclosure and are therefore not to be considered limiting in scope. The disclosure will be described and explained with additional specificity and detail with the appended figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The disclosure will be described and explained with additional specificity and detail with the accompanying figures in which:

[0008] FIG. 1 is a flowchart representing the steps of a method for manufacturing edible cutlery in accordance with an embodiment of the present disclosure;

[0009] FIG. 2 is a schematic representation of an embodiment of a system for compacting of uncompressed state of dough mixture during the process of manufacturing of edible cutlery of FIG. 1 in accordance of an embodiment of the present disclosure;

[0010] FIG. 3 is a schematic representation of an embodiment of a system for compacting of compressed state of dough mixture during the process of manufacturing of edible cutlery of FIG. 1 in accordance of an embodiment of the present disclosure;

[0011] FIG. 4 is a schematic representation of an embodiment of a system of baking of compressed state of dough mixture during the process of manufacturing of edible cutlery of FIG. 1 in accordance of an embodiment of the present disclosure.

[0012] Further, those skilled in the art will appreciate that elements in the figures are illustrated for simplicity and may not have necessarily been drawn to scale. Furthermore, in terms of the construction of the device, one or more components of the device may have been represented in the figures by conventional symbols, and the figures may show only those specific details that are pertinent to understanding the

embodiments of the present disclosure so as not to obscure the figures with details that will be readily apparent to those skilled in the art having the benefit of the description herein.

DETAILED DESCRIPTION

[0013] For the purpose of promoting an understanding of the principles of the disclosure, reference will now be made to the embodiment illustrated in the figures and specific language will be used to describe them. It will nevertheless be understood that no limitation of the scope of the disclosure is thereby intended. Such alterations and further modifications in the illustrated online platform, and such further applications of the principles of the disclosure as would normally occur to those skilled in the art are to be construed as being within the scope of the present disclosure.

[0014] The terms "comprises", "comprising", or any other variations thereof, are intended to cover a non-exclusive inclusion, such that a process or method that comprises a list of steps does not include only those steps but may include other steps not expressly listed or inherent to such a process or method. Similarly, one or more devices or subsystems or elements or structures or components preceded by "comprises... a" does not, without more constraints, preclude the existence of other devices, subsystems, elements, structures, components, additional devices, additional subsystems, additional elements, additional structures or additional components. Appearances of the phrase "in an embodiment", "in another embodiment" and similar language throughout this specification may, but not necessarily do, all refer to the same embodiment.

[0015] Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by those skilled in the art to which this disclosure belongs. The system, methods, and examples provided herein are only illustrative and not intended to be limiting.

[0016] In the following specification and the claims, reference will be made to a number of terms, which shall be defined to have the following meanings. The singular forms "a", "an", and "the" include plural references unless the context clearly dictates otherwise.

[0017] Embodiments of the present disclosure relate to a method of manufacturing edible cutlery. The method includes grinding a plurality of solid ingredients in form of a powder. The method also includes mixing the powder with at least one of a 45-75 percentage weight of flour, a 30-60 percentage weight of water and a 1-5 percentage weight of oil to form a dough mixture. The method also includes rolling of the dough mixture into one or more sheets. The method also includes compacting the one or more sheets by placing on one or more moulds of cutlery while applying a pre-determined pressure. The method also includes baking one or more compact sheets at a pre-determined temperature for a pre-determined duration to obtain the edible cutlery.

[0018] FIG. 1 is a flowchart representing the steps of a method (10) of manufacturing edible cutlery in accordance with an embodiment of the present disclosure. As used herein, “edible cutlery” refers to tableware, such as plates, drinkware and glasses, utensils and cutlery, that is edible. In one embodiment, edible cutlery may be homemade and mass-produced by some manufacturer. In one embodiment, edible cutlery includes straws, stirrers, chopsticks and the like.

[0019] The method (10) of manufacturing edible cutlery includes grinding a plurality of solid ingredients in form of a powder in a step 20. In one embodiment, grinding the plurality of solid ingredients in form of the powder includes the plurality of solid ingredients comprising at least one of seeds, leaves, bran, roots, salt, pepper, sugar, vanilla, chocolate and paprika and edible gum.

[0020] In one embodiment, grinding the plurality of solid ingredients in form of the powder includes grinding of processed seeds without husk. In such embodiment, grinding of processed seeds includes grinding of at least one of pumpkin seeds, sunflower seeds, cumin seeds, flax seeds and the like. As used herein, “processed seeds” refers to any seed that has been altered in some way during preparation.

[0021] In another embodiment, grinding the plurality of solid ingredients in form of the powder includes grinding of processed leaves. In such embodiment, grinding of processed leaves includes grinding of at least one of moringa leaves, mint leaves, fenugreek leaves and the like.

[0022] In yet another embodiment, grinding the plurality of solid ingredients in form of the powder includes grinding at least one of oat bran, wheat bran, rice bran and the like.

[0023] In yet another embodiment, grinding the plurality of solid ingredients in form of the powder includes grinding of natural gum. In one specific embodiment, the grinding of natural gum includes Tragacanthin gum or Acacia gum. In such embodiment, the natural gum is grinded to fine powder and blended with heated oil or fatty substance or water to form a thick paste.

[0024] In one specific embodiment, grinding the plurality of solid ingredients in the form of the powder includes grinding at least one of 3-10 percentage weight of seeds, 3-10 percentage weight of leaves, 3-10 percentage weight of bran, 3-10 percentage weight of roots, 0.5-3 percentage weight of first set of flavouring agents, 3-20 percentage weight of second set of flavouring agents, 2-10 percentage weight of edible gum and the like.

[0025] In one embodiment, grinding the plurality of solid ingredients in the form of the powder includes 0.5-3 percentage weight of first set of flavouring agents. In such embodiment, the first set of flavouring agents consists of salt, sugar and pepper. In another embodiment, grinding the plurality of solid ingredients in the form of the powder includes 3-20 percentage weight of second set of flavouring agents. In another such embodiment, the second set flavouring agents consists of vanilla, chocolate and paprika.

[0026] The method (10) of manufacturing edible cutlery also includes mixing the powder with at least one of a 45-75 percentage weight of flour, a 30-60 percentage weight of water and a 1-5 percentage weight of oil to form a dough mixture in the step 30. In one embodiment, mixing the powder with the 30-60 percentage weight of water to form a dough mixture includes mixing the powder with the 30-60 percentage weight of water at the temperature of water in the range of 60-90 degree centigrade.

[0027] Furthermore, in one embodiment, mixing the powder with the 45-75 percentage weight of flour includes mixing the powder with flour comprising at least one of wheat, rice, sorghum, millet, corn and the like.

[0028] The method (10) of manufacturing edible cutlery also includes rolling of the dough mixture into one or more sheets in the step 40. As used herein, “dough mixture” refers to a mixture that consists essentially of flour or meal and a liquid (such as milk or water) and is stiff enough to knead or roll.

[0029] The method (10) of manufacturing edible cutlery also includes compacting the one or more sheets by placing on one or more moulds of cutlery while applying a pre-determined pressure in the step 50. As used herein, “moulds” refers a hollow container used to give shape to molten or hot liquid material when it cools and hardens. As used herein, “compact” refers to a way to exert force on something (here mixture dough) so that it becomes denser.

[0030] In one embodiment, compacting the one or more sheets by placing on one or more moulds of cutlery includes compacting the one or more sheets by placing the dough mixture (80) on the one or more moulds (90) of cutlery as shown in FIG. 2 for a duration of in the range of 15 seconds to 2 minutes. In such embodiment, compacting the one or more sheets by placing on one or more moulds of cutlery includes applying a pre-determined pressure by the help of plug (70).

[0031] In one exemplary embodiment, a plug (70) is used to apply pressure over the one or more moulds (90) as shown in FIG. 3. Pressure application enables in providing desired shapes. In one such embodiment, the shapes may be of the shape of knife, shape of spoon, shape of fork, shape of plates and the like.

[0032] The method (10) of manufacturing edible cutlery also includes baking one or more compact sheets at a pre-determined temperature for a pre-determined duration to obtain the edible cutlery in the step 60. In one embodiment, baking the one or more compact sheets at the pre-determined temperature for the pre-determined duration to obtain the edible cutlery includes baking the one or more compact sheets at the temperature range of 180-300 degree centigrade.

[0033] Moreover, in another embodiment, baking the one or more compact sheets at the pre-determined temperature for the pre-determined duration to obtain the edible cutlery includes baking the one or more compact sheets for the pre-determined duration to obtain the edible cutlery comprising the duration of 2 minutes to 10 minutes by a heated mould (100). In yet another embodiment, baking the one or more

compact sheets at the pre-determined temperature for the pre-determined duration to obtain the edible cutlery includes removing the product from the mould and cooling the product at room temperature for the duration is in the range of 2 minutes to 12 minutes. In another exemplary embodiment, the total duration of curing process is in the range of 5 minutes to 25 minutes.

[0034] In one exemplary embodiment, the edible cutlery containing a particular seed can germinate during the process of biodegradation. For example, during the process of manufacturing of edible cutlery a specific seed is placed within the cutlery. The edible cutlery after usage when undergoes biodegradable process may enable in germination of the specific seed with consideration of favourable conditions. In another exemplary embodiment, the edible cutlery may be consumed upon being used without creating any health problems.

[0035] Present disclosure of invention is a method of manufacturing edible cutlery is practically a replacement for plastic cutleries. Edible cutlery is biodegradable within shorter period. Further, the process of manufacturing shows it gives high nutritional benefits for its users. The present disclosure emphasis on nutritional benefits as use of seeds, roots, leaves, bran or combination gives proper edible mixture. Moreover, the cutlery may be flavoured according to the need. Present disclosure is enabled using ingredients containing high fibrous content, such property enables to increase the structural stability of the cutlery.

[0036] While specific language has been used to describe the disclosure, any limitations arising on account of the same are not intended. As would be apparent to a person skilled in the art, various working modifications may be made to the method in order to implement the inventive concept as taught herein.

[0037] The figures and the foregoing description give examples of embodiments. Those skilled in the art will appreciate that one or more of the described elements may well be combined into a single functional element. Alternatively, certain elements may be split into multiple functional elements. Elements from one embodiment may be added to another embodiment. For example, order of processes described herein may be changed and are not limited to the manner described herein. Moreover, the actions of any flow diagram need not be implemented in the order shown; nor do all of the

acts need to be necessarily performed. Also, those acts that are not dependant on other acts may be performed in parallel with the other acts. The scope of embodiments is by no means limited by these specific examples.

WE CLAIM:

1. A method (10) to manufacture edible cutlery, comprising:

grinding a plurality of solid ingredients in form of a powder, wherein the plurality of solid ingredients comprises at least one of seeds, leaves, bran, roots, salt, pepper, sugar, vanilla, chocolate and paprika and edible gum (20);

mixing the powder with at least one of a 45-75 percentage weight of flour, a 30-60 percentage weight of water and a 1-5 percentage weight of oil to form a dough mixture (30);

rolling of the dough mixture into one or more sheets (40);

compacting the one or more sheets by placing on one or more moulds of cutlery while applying a pre-determined pressure (50); and

baking one or more compact sheets at a pre-determined temperature for a pre-determined duration to obtain the edible cutlery (60).

2. The method (10) as claimed in claim 1, wherein weight percentage of the plurality of solid ingredients comprises

3- 10 percentage weight of seeds;

3-10 percentage weight of leaves;

3-10 percentage weight of bran;

3-10 percentage weight of roots;

0.5-3 percentage weight of first set of flavouring agents, wherein the first set of flavouring agents consists of salt, sugar and pepper;

3-20 percentage weight of second set of flavouring agents, wherein the second set flavouring agents consists of vanilla, chocolate and paprika; and

2-10 percentage weight of edible gum.

3. The method (10) as claimed in claim **1**, wherein the compacting the one or more sheets by placing on one or more moulds of cutlery for a duration 15 seconds to 2 minutes during applying a pre-determined pressure.
4. The method (10) as claimed in claim **1**, wherein the pre-determined temperature for baking process is 180-300 degree centigrade, wherein the baking process is for the duration of 2 minutes to 10 minutes.
5. The method (10) as claimed in claim **1**, wherein the temperature of the water for kneading the mixture dough is 60-90 degree centigrade.
6. The method (10) as claimed in claim **1**, wherein curing time for the mixture is 5- 25 minutes.

Dated this the 24th day of January 2019

Signature

A handwritten signature in blue ink, featuring a stylized 'V' and 'B' intertwined, with a horizontal line crossing through them.

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METHOD OF MANUFACTURING EDIBLE CUTLERY

ABSTRACT

Present disclosure relates to a method of manufacturing edible cutlery. The method includes grinding a plurality of solid ingredients in form of a powder. The method also includes mixing the powder with at least one of a 45-75 percentage weight of flour, a 30-60 percentage weight of water and a 1-5 percentage weight of oil to form a dough mixture. The method also includes rolling of the dough mixture into one or more sheets. The method also includes compacting the one or more sheets by placing on one or more moulds of cutlery while applying a pre-determined pressure. The method also includes baking one or more compact sheets at a pre-determined temperature for a pre-determined duration to obtain the edible cutlery. The present disclosure emphasis on nutritional benefits as use of seeds, roots, leaves, bran or combination gives proper edible mixture.

FIG. 1