

Claims:

1. A process for making a coconut sugar substitute comprising:
 - a. incubating an unrefined sucrose-based plant extract containing sucrose as the main solute under aerobic conditions with one or more aerobic microbial strains to form a modified unrefined sucrose-based plant extract;
 - b. evaporating water from the modified sucrose-based plant extract to form a concentrate; and
 - c. cooking the concentrate to develop colour and flavour to produce the coconut sugar substitute.
2. The process according to claim 1, wherein the unrefined sucrose-based plant extract containing sucrose as the main solute comprises sucrose-based plant juice partially processed prior to incubating with the one or more aerobic microbial strains.
3. The process according to any one of the preceding claims, wherein the unrefined sucrose-based plant extract containing sucrose as the main solute comprises sucrose-based plant juice; and at least one of jaggery, molasses, coconut sap, extract from palm species, or a combination thereof.
4. The process according to claim 3, wherein the sucrose-based plant extract is sugar beet plant extract and the main solute comprises sugar beet juice.
5. The process according to any one of the preceding claims, wherein the unrefined sucrose-based plant extract containing sucrose as the main solute comprises a sucrose carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 .
6. The process according to any one of the preceding claims, wherein the unrefined sucrose-based plant extract containing sucrose as the main solute is adjusted to a refractometric dry substance content of 8°Bx to 40°Bx prior to incubating with the one or more aerobic microbial strains.
7. The process according to any one of the preceding claims, wherein the one or more aerobic microbial strains comprise an osmo-tolerant and/or a halo-tolerant aerobic microbial strain able to grow in a medium with a refractometric dry substance content of 8°Bx to 40°Bx .
8. The method according to any one of the preceding claims, wherein the one or more aerobic microbial strains is any one selected from the group comprising *Xanthomonadaceae*; *Brevibacteriaceae*; *Saccharomycetaceae*; *Bacillaceae* *Stenotrophomonas maltophilia*; *Cellulosimicrobium cellulans*; *Bacillus subtilis*; *Bacillus flexus*; and *Kluyveromyces* species.

9. The process according to any one of the preceding claims, wherein the modified unrefined sucrose-based plant extract is heated and cooked until reaching a temperature and refractometric dry substances content of 65 °C to 170 °C and 50 °Bx to 100 °Bx, or 110 °C to 130 °C and 75 °Bx to 95 °Bx or 120 °C and 90 °Bx.
10. The process according to any one of the preceding claims, wherein incubating the sucrose-based plant extract is operated with the sucrose-based plant extract having a refractometric dry substances content of 8 °Bx to 30 °Bx, for 1 hour to 24 hours, at a temperature from 20 °C to 40 °C, at a pressure from 1 bar to 5 bar, at a pH from 4 to 10, a linear tip speed from 0 m/s to 10 m/s, gassing from 0 vvm to 2 vvm (volume gas per volume medium per minute) and a relative dissolved oxygen concentration from 20% to 100%.
11. The process according to claim 10, wherein incubating the sucrose-based plant extract is operated with the sucrose-based plant extract having a refractometric dry substances content of 12 °Bx to 16 °Bx, for 3 hours to 5 hours, at a temperature of 33 °C, at a pH around 6, and a relative dissolved oxygen concentration of 30%.
12. The process according to any one of the preceding claims, further comprising the step of reducing the sucrose concentration of the coconut sugar substitute to form a reduced sucrose coconut sugar substitute.
13. The process according to claim 12, wherein the step of reducing the sucrose concentration is by affination, filtration, centrifugation, or solvent extraction.
14. The process according to claim 13, wherein the step of reducing the sucrose concentration of the coconut sugar substitute comprises crystallising the coconut sugar substitute and performing selective washing thereby separating a syrup of the coconut sugar substitute from a crystal phase of the coconut sugar substitute.
15. The process according to any one of claims 12 to 14, further comprising adding a sweetener with a low glycaemic index.
16. The process according to any one of claims 12 to 15, further comprising adding any one selected from the group comprising: isomalt, isomaltulose, and D-tagatose.
17. A coconut sugar substitute derivable by the process according to any one of claims 1 to 16.
18. The coconut sugar substitute according to claim 17, comprising:
a first characteristic comprising at least one selected from the group comprising: a sucrose content of at least 40 weight percent; a sucrose carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20; an isotope ratio of the molecules aconitic acid, glutamic acid, monosodium glutamate, guanosine monophosphate, inosine monophosphate, disodium

guanylate and disodium inosinate molecules, and an aroma chemical molecule consisting of a carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; aconitic acid present at greater than 0.1 weight percent; a potassium to sodium weight by weight ratio of 5 or greater; and (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one present at a flavour dilution number of at least 8; and

a third characteristic comprising at least one aroma chemical molecule selected from the group comprising: 3-Hydroxy-4,5-dimethyl-2(5*H*)-furanone at a flavour dilution number of at least 10, 4-Hydroxy-3-methoxybenzaldehyde at a flavour dilution number of at least 7, 4-Hydroxy-2,5-dimethyl-3(2*H*)-furanone at a flavour dilution number of at least 5, 3-Methylsulfanypropanal, Acetic acid, 2-Methylbutanoic acid/ 3-methylbutanoic acid, 2-Phenylpropionic acid/ 3-Phenylpropionic acid, Phenylacetic acid, 2-Methoxy-4-prop-1-en-2-ylphenol, (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one, 2-Methylbutanal/ 3-Methylbutanal, (*E*)-3-[(2*S*,3*R*)-3-Pentyl oxiran-2-yl]prop-2-enal, 2-methoxy-4-prop-2-enylphenol, and 2-Methoxyphenol.

19. The coconut sugar substitute according to claim 18, further comprising a second characteristic comprising at least one selected from glutamic acid and monosodium glutamate present at a combined concentration greater than 0.1 weight percent; or guanosine monophosphate, inosine monophosphate, disodium guanylate and disodium inosinate present at a combined concentration of greater than 0.1 weight percent.
20. The coconut sugar substitute according to claim 18, wherein the first characteristic comprises at least three selected from the group comprising: a sucrose content of at least 40 weight percent; a sucrose carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; an isotope ratio of the molecules aconitic acid, glutamic acid, monosodium glutamate, guanosine monophosphate, inosine monophosphate, disodium guanylate and disodium inosinate molecules, and an aroma chemical molecule consisting of a carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; aconitic acid present at greater than 0.1 weight percent; a potassium to sodium weight by weight ratio of 5 or greater; and (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one present at a flavour dilution number of at least 8; and
the third characteristic comprises at least seven aroma chemical molecules selected from the group comprising: 3-Hydroxy-4,5-dimethyl-2(5*H*)-furanone at a flavour dilution number of at least 10, 4-Hydroxy-3-methoxybenzaldehyde at a flavour dilution number of

at least 7, 4-Hydroxy-2,5-dimethyl-3(2*H*)-furanone at a flavour dilution number of at least 5, 3-Methylsulfanypropanal, Acetic acid, 2-Methylbutanoic acid/ 3-methylbutanoic acid, 2-Phenylpropionic acid/ 3-Phenylpropionic acid, Phenylacetic acid, 2-Methoxy-4-prop-1-en-2-ylphenol, (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one, 2-Methylbutanal/ 3-Methylbutanal, (*E*)-3-[(2*S*,3*R*)-3-Pentyl oxiran-2-yl]prop-2-enal, 2-methoxy-4-prop-2-enylphenol, and 2-Methoxyphenol.

21. The coconut sugar substitute according to claim 18, wherein the first characteristic comprises at least five selected from the group comprising: a sucrose content of at least 40 weight percent; a sucrose carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; an isotope ratio of the molecules aconitic acid, glutamic acid, monosodium glutamate, guanosine monophosphate, inosine monophosphate, disodium guanylate and disodium inosinate molecules, and an aroma chemical molecule consisting of a carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; aconitic acid present at greater than 0.1 weight percent; a potassium to sodium weight by weight ratio of 5 or greater; and (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one present at a flavour dilution number of at least 8; and
- the third characteristic comprises at least twelve aroma chemical molecules selected from the group comprising: 3-Hydroxy-4,5-dimethyl-2(5*H*)-furanone at a flavour dilution number of at least 10, 4-Hydroxy-3-methoxybenzaldehyde at a flavour dilution number of at least 7, 4-Hydroxy-2,5-dimethyl-3(2*H*)-furanone at a flavour dilution number of at least 5, 3-Methylsulfanypropanal, Acetic acid, 2-Methylbutanoic acid/ 3-methylbutanoic acid, 2-Phenylpropionic acid/ 3-Phenylpropionic acid, Phenylacetic acid, 2-Methoxy-4-prop-1-en-2-ylphenol, (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one, 2-Methylbutanal/ 3-Methylbutanal, (*E*)-3-[(2*S*,3*R*)-3-Pentyl oxiran-2-yl]prop-2-enal, 2-methoxy-4-prop-2-enylphenol, and 2-Methoxyphenol.
22. The coconut sugar substitute according to any one of claims 17 to 21, wherein the coconut sugar substitute is a syrup, paste, amorphous, or semi-crystalline solid.
23. The coconut sugar substitute according to any one of claims 17 to 22, wherein the coconut sugar substitute has a refractometric dry substances content of 50 °Bx to 100 °Bx, or 75 °Bx to 95 °Bx, or 90 °Bx.
24. The coconut sugar substitute according to any one of claims 17 to 23, comprising a sucrose content of below 40 weight percent.
25. The coconut sugar substitute according to claim 24, comprising a sucrose content of 10 weight percent to 40 weight percent.

26. The coconut sugar substitute according claim 25, further comprising a sweetener with a low glycaemic index.
27. The coconut sugar substitute according claim 25, further comprising any one selected from the group comprising: isomalt, isomaltulose, and D-tagatose.
28. A process of making a flavour extract comprising:
- (a) making a coconut sugar substitute according to any one of claims 1 to 16, or obtaining a coconut sugar substitute according to any one of claims 17 to 27; and
 - (b) isolating one or more aroma chemical molecules from the modified sucrose-based plant extract or the coconut sugar substitute or the syrup of the coconut sugar substitute, or the crystal phase of the coconut sugar substitute.
29. A flavour extract derivable by the process of claim 28, the flavour extract comprising at least ten aroma chemical molecules selected from the group comprising: 3-Hydroxy-4,5-dimethyl-2(5*H*)-furanone; 4-Hydroxy-3-methoxybenzaldehyde; 4-Hydroxy-2,5-dimethyl-3(2*H*)-furanone; 3-Methylsulfanylpropanal; Acetic acid; 2-Methylbutanoic acid/ 3-methylbutanoic acid; 2-Phenylpropionic acid/ 3-Phenylpropionic acid; Phenylacetic acid; 2-Methoxy-4-prop-1-en-2-ylphenol; (*E*)-1-(2,6,6-Trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-on; 2-Methylbutanal/ 3-Methylbutanal; (*E*)-3-[(2*S*,3*R*)-3-Pentyloxiran-2-yl]prop-2-enal; 2-Methoxy-4-prop-2-enylphenol; and 2-methoxyphenol.
30. A process for manufacturing a food product, comprising:
- a. making a coconut sugar substitute according to any one of claims 1 to 16, or obtaining a coconut sugar substitute according to any one of claims 17 to 27, or making a flavour extract according to claim 28, or obtaining a flavour extract according to claim 29;
 - b. mixing the coconut sugar substitute or flavour extract with an additional ingredient; and
 - c. forming the food product.
31. The process according to claim 30, wherein the additional ingredient is any one selected from the group comprising: sauce, spices, plant extracts, flavours, flavour molecules, flavour enhancers, chocolate, dried fruits, ginger, seeds, nuts, milk, cream, custard, butter, cocoa, milo, vinegar, vegetable, chilli, onion, garlic, lemongrass, tamarind, turmeric, cinnamon, coriander, pepper, meat, tempeh, green beans, soy sauce, maize, carrots, potato, chicken, cocoa butter, fruit, vanillin, vanilla, coffee, toffee, emulsifiers, lecithin, and polyglycerol polyricinoleate.
32. The process according to claim 30, wherein the additional ingredient comprises soy sauce or sweet soy sauce.

33. The process according to claim 30, wherein the additional ingredient comprises a salt solution and acetic acid or vinegar.
34. The process according to any one of claims 30 to 33, wherein the additional ingredient further comprises flour and/or starch.
35. The process according to claim 34, wherein the additional ingredient further comprises an oil.
36. The process according to any one of claims 30 to 35, wherein the additional ingredient is any one selected from the group comprising: sweeteners with a low glycaemic index, isomalt, isomaltulose and D-tagatose.
37. A food product derivable by the process of any one of claims 30 or 31.
38. The food product according to claim 37 comprising:
- a first characteristic comprising at least one selected from the group comprising: a sucrose carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; an isotope ratio of the molecules aconitic acid, glutamic acid, monosodium glutamate, guanosine monophosphate, inosine monophosphate, disodium guanylate and disodium inosinate molecules, and an aroma chemical molecule consisting of a carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; aconitic acid present; a potassium to sodium weight by weight ratio of 0.5 or greater; and (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one present at a flavour dilution number of at least 8; and
- a third characteristic comprising at least one selected from the group comprising: 3-Hydroxy-4,5-dimethyl-2(5*H*)-furanone at a flavour dilution number of at least 10, 4-Hydroxy-3-methoxybenzaldehyde at a flavour dilution number of at least 7, 4-Hydroxy-2,5-dimethyl-3(2*H*)-furanone at a flavour dilution number of at least 5, 3-Methylsulfanypropanal, Acetic acid, 2-Methylbutanoic acid/ 3-methylbutanoic acid, 2-Phenylpropionic acid/ 3-Phenylpropionic acid, Phenylacetic acid, 2-Methoxy-4-prop-1-en-2-ylphenol, (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one, 2-Methylbutanal/ 3-Methylbutanal, (*E*)-3-[(2*S*,3*R*)-3-Pentyl oxiran-2-yl]prop-2-enal, 2-methoxy-4-prop-2-enylphenol, and 2-Methoxyphenol.
39. The food product according to any one of claims 37 or 38, wherein the additional ingredient is any one selected from the group comprising: sauce, spices, plant extracts, flavours, flavour molecules, flavour enhancers, chocolate, dried fruits, ginger, seeds, nuts, milk, cream, custard, butter, cocoa, milo, vinegar, vegetable, chili, onion, garlic, lemongrass, tamarind, turmeric, cinnamon, coriander, pepper, meat, tempeh, green

beans, soy sauce, maize, carrots, potato, chicken, cocoa butter, fruits, sweet sauce, salt and acetic acid.

40. The food product according to any one of claims 37 or 38, wherein the additional ingredient is any one selected from the group comprising: cocoa powder, chocolate liquor, water cocoa butter, chocolate, milk, cocoa butter, nuts, fruit, flavourings, vanillin, vanilla, coffee, toffee, emulsifiers, lecithin, polyglycerol polyricinoleate.
41. The food product according to any one of claims 37 or 38, wherein the additional ingredient is any one selected from the group comprising: seeds, nuts and dried fruits.
42. The food product according to any one of claims 37 to 41, further comprising flour and/or starch.
43. The food product according to claim 42, wherein the additional ingredient comprises oil.
44. A sweet sauce derivable by the process according to of any one of claims 32 to 36.
45. The sweet sauce according to claim 44, comprising:
 - a first characteristic comprising at least one selected from the group comprising: a sucrose carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; an isotope ratio of the molecules aconitic acid, glutamic acid, monosodium glutamate, guanosine monophosphate, inosine monophosphate, disodium guanylate and disodium inosinate molecules, and an aroma chemical molecule consisting of a carbon-13 to carbon-12 isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of more than or equal to 11 parts per thousand, with a range of delta ^{13}C values of -5 and -20 ; aconitic acid present at greater than 0.1 weight percent; a potassium to sodium weight by weight ratio of 0.5 or greater; and (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one present at a flavour dilution number of at least 8;
 - a second characteristic comprising at least one selected from glutamic acid and monosodium glutamate present at a combined concentration greater than 0.1 weight percent; guanosine monophosphate, inosine monophosphate, disodium guanylate and disodium inosinate present at a combined concentration of greater than 0.1 weight percent; and;
 - a third characteristic comprising at least one selected from the group comprising: 3-Hydroxy-4,5-dimethyl-2(5*H*)-furanone at a flavour dilution number of at least 10, 4-Hydroxy-3-methoxybenzaldehyde at a flavour dilution number of at least 7, 4-Hydroxy-2,5-dimethyl-3(2*H*)-furanone at a flavour dilution number of at least 5, 3-Methylsulfanylpropanal, Acetic acid, 2-Methylbutanoic acid/ 3-methylbutanoic acid, 2-Phenylpropionic acid/ 3-Phenylpropionic acid, Phenylacetic acid, 2-Methoxy-4-prop-1-en-

2-ylphenol, (*E*)-1-(2,6,6-trimethyl-1-cyclohexa-1,3-dienyl)but-2-en-1-one, 2-Methylbutanal/ 3-Methylbutanal, (*E*)-3-[(2*S*,3*R*)-3-Pentyl oxiran-2-yl]prop-2-enal, 2-methoxy-4-prop-2-enylphenol, and 2-Methoxyphenol.

46. The sweet sauce according to any one of claims 44 or 45, wherein the additional ingredient comprises a soy sauce or a sweet soy sauce.
47. The sweet sauce according to any one of claims 44 or 45, wherein the additional ingredient comprises a salt solution and acetic acid or vinegar, and optionally flavour extracts and/or flavour molecules.
48. The sweet sauce according to any one of claims 46 or 47, wherein the additional ingredient further comprises flour and/or starch to make a powdered form of the sweet sauce.
49. The sweet sauce according to claim 48, wherein the additional ingredient further comprises oil to make a stock cube of the sweet sauce.
50. The sweet sauce according to any one of claims 44 to 49, further comprising any one selected from the group comprising: reduced sucrose flavoured sweetener, low glycaemic index flavoured sweetener, additionally flavoured sweetener, additionally flavoured reduced sucrose flavoured sweetener, additionally flavoured low glycaemic index flavoured sweetener, coconut sugar, jaggery, and molasses.