

CLAIMS

1. A method for processing fermented or incubated cocoa beans comprising the steps of:
 - adding water to fermented or incubated cocoa beans or nibs to form a suspension;
 - wet grinding said suspension;
 - subjecting said suspension to a heat treatment at a temperature of 70°C or less;
 - separating the suspension into a water phase (heavy phase), a fat phase (light phase) and a solid phase, said fat phase comprising cocoa butter as a major component and solids and/or water as minor components and said solid phase comprising cocoa powder and water; and
 - separately processing the three phases, which optionally comprises:
 - separating cocoa butter from the fat phase,
 - separating cocoa powder from the solid phase, and
 - separating cocoa aroma and a polyphenolic powder from at least the water phase;
 - characterized in that the step of separately processing the three phases comprises:
 - neutralizing acetic acid formed during fermentation or formed or added prior to or during an incubation of the cocoa beans in the water phase; and/or
 - removing said acetic acid from the water phase.
2. The method according to claim 1, wherein acetic acid is removed from the water phase by distillation, extraction, emulsion-type liquid membrane processes, salting out or combinations thereof.
3. The method according to claims 1 or 2, wherein said water phase is subjected one or more concentration step(s) to obtain said cocoa aroma and polyphenolic powder extracts.
4. The method according to claim 3, wherein acetic acid is removed from the water phase prior to or during the concentration step(s).
5. The method according to any of the preceding claims, wherein cocoa aroma and polyphenolic powder are extracted from the water phase and the solid phase.
6. The method according to any of the preceding claims, further including a drying step of the solid phase in a dryer after separation in three phases to obtain aromatics and cocoa solids.
7. The method according to claim 4, wherein the dryer is a drum dryer.

8. The method according to claim 4, wherein the dryer is a mixing device comprising: a cylindrical, tubular body having an inlet and outlet openings for the solid phase arranged with its axis horizontal and closed at its opposite ends by end plates; a coaxial heating or cooling jacket; and a bladed rotor is supported for rotation in the tubular body, its blades being arranged as a helix and oriented for centrifuging the solid phase being processed and simultaneously transporting it towards the outlet opening, wherein the outlet opening communicates, by means of a duct, with a device for separating the aroma phase from the dried product in order to continuously dry the cocoa solids and separate aromatics.

9. The method according any of the preceding claims wherein said cocoa processing steps are performed without use of non-water solvents.

10. The method according to any of the preceding claims wherein each of said cocoa processing steps are performed at temperatures of no more than approximately 70°C.

11. A chocolate construction kit comprising the cocoa butter, cocoa powder, polyphenolic powder and cocoa aroma extracts obtained by the method according to claim 1,

wherein the cocoa aroma comprises a total concentration of 2-acetylpyrazine, methylpyrazine, tetramethylpyrazine, 2,3-dimethylpyrazine, 2,6-dimethylpyrazine, 2,5-dimethylpyrazine, trimethylpyrazine, ethylpyrazine, 2-ethyl-3-methylpyrazine, 2-ethyl-6-methylpyrazine, 2-ethyl-5-methylpyrazine, 2-ethyl-3,6-dimethylpyrazine, 2-ethyl-3,4-dimethylpyrazine, 2,3-diethyl-5-methylpyrazine, 2-isopropyl-3-methoxypyrazine, 2-isobutyl-3-methoxypyrazine, 2-ethyl-3,4-dimethylpyrazine, 1-methyl-1H-pyrrole, ethyl-2-methyl butanoate, 3-methylbutyl acetate, 2-heptanone, hexyl acetate, linaool, benzyl alcohol, 2-phenylethanol, ethyl cinnamate, 2-phenethyl acetate, 2-phenyl-2-butenal, ethyloctanoate, 4-ethyl guaiacol, 4-vinyl guaiacol; vanillin, isobutanal, 2-methyl butanal, isovaleraldehyde, acetoin, diacetyl, furfural, 2-acetyl furane, benzaldehyde, 5-methylfurfural, 2-furanmethanol, methional, phenylacetaldehyde, and 4-methylphenol of at least 800 mg/kg based on the total weight of the cocoa aroma; and

wherein the cocoa aroma has a total concentration of acetic acid, propionic acid, isobutyric acid, 2-methylbutyric acid, 3-methylbutanoic acid, and pentanoic acid of less than 50 g/kg.

12. A method for producing chocolate or chocolate-like products comprising the steps of:
 adding water to fermented or incubated cocoa beans or nibs to form a suspension;
 wet grinding said suspension;
 subjecting said suspension to a heat treatment at a temperature of 70°C or less;

separating the suspension into three phases, i.e. a water phase (heavy phase), a fat phase (light phase) and a solid phase, said fat phase comprising cocoa butter as a major component and solids and/or water as minor components and said solid phase comprising cocoa powder and water; and

separately processing the three phases, which comprises:

separating cocoa butter from the fat phase,

separating cocoa powder from the solid phase, and

separating cocoa aroma and a polyphenolic powder from at least the water phase;

recombining the cocoa aroma extract with the cocoa butter extract;

mixing the recombined extracts with said cocoa powder extract, said polyphenolic powder extract and/or milk powder; and

conching said mixture;

characterized in that the step of separately processing the three phases further comprises: neutralizing acetic acid formed during fermentation of formed or added prior to or during an incubation of the cocoa beans in the water phase and/or removing said acetic acid from the water phase.

13. The method according to claim 10, wherein the recombined extracts are mixed with at least said cocoa powder extract and said polyphenolic powder extract.

14. The method according to claims 12 or 13, wherein the recombined extracts are further mixed with sugar, sweetener or cocoa pulp.

15. A chocolate or chocolate-like product obtained by the method according to any one of claims 12 to 14,

wherein the cocoa aroma comprises a total concentration of 2-acetylpyrazine, methylpyrazine, tetramethylpyrazine, 2,3-dimethylpyrazine, 2,6-dimethylpyrazine, 2,5-dimethylpyrazine, trimethylpyrazine, ethylpyrazine, 2-ethyl-3-methylpyrazine, 2-ethyl-6-methylpyrazine, 2-ethyl-5-methylpyrazine, 2-ethyl-3,6-dimethylpyrazine, 2-ethyl-3,4-dimethylpyrazine, 2,3-diethyl-5-methylpyrazine, 2-isopropyl-3-methoxypyrazine, 2-isobutyl-3-methoxypyrazine, 2-ethyl-3,4-dimethylpyrazine, 1-methyl-1H-pyrrole, ethyl-2-methyl butanoate, 3-methylbutyl acetate, 2-heptanone, hexyl acetate, linaool, benzyl alcohol, 2-phenylethanol, ethyl cinnamate, 2-phenethyl acetate, 2-phenyl-2-butenal, ethyloctanoate, 4-ethyl guaiacol, 4-vinyl guaiacol; vanillin, isobutanal, 2-methyl butanal, isovaleraldehyde, acetoin, diacetyl, furfural, 2-acetylfurane, benzaldehyde, 5-methylfurfural, 2-furanmethanol,

methional, phenylacetaldehyde, and 4-methylphenol of at least 800 mg/kg based on the total weight of the cocoa aroma; and

wherein the cocoa aroma has a total concentration of acetic acid, propionic acid, isobutyric acid, 2-methylbutyric acid, 3-methylbutanoic acid, and pentanoic acid of less than 50 g/kg.