CLAIMS

1. A method for preparing a botanical extract, the method comprising:

subjecting a botanical material to an extract pressure under influence of liquid carbon dioxide to perform a supercritical carbon dioxide extraction process to obtain an extraction mixture;

separating an intermediate extract from the extraction mixture; and

substantially immediately following the step of separating, feeding the intermediate extract to a series of stages to perform molecular distillation to obtain the botanical extract with an improved level of one or more parameters as compared to the intermediate extract,

wherein the one or more parameters comprise at least one of density, acid value, refractive index, appearance, or miscibility,

each stage is set to a predetermined distillation temperature, a predetermined vacuum pressure and a predetermined rotation speed, and

the supercritical carbon dioxide extraction process, separation of the intermediate extract and the molecular distillation are performed continuously and not separately as different batches.

2. The method as claimed in claim 1, further comprising prior to the step of subjecting the botanical material to the extract pressure under influence of liquid carbon dioxide, grounding at least part of a plant into a powder and pelleting the powder to obtain the botanical material in granular form.

3. The method as claimed in claim 2, wherein the at least part of the plant comprises patchouli leaves, clove buds, nutmeg, ginger, cinnamon, cassia, black pepper or a plant material containing essential oils.

4. The method as claimed in claim 2 or 3, wherein the powder has a size of 140 mesh or less, and the botanical material in granular form has an average diameter of 2 mm to 10 mm, and an average thickness of 2 mm to 4.5 mm.

5. The method as claimed in any one of claims 2 to 4, further comprising prior to grounding the at least part of the plant, drying the at least part of the plant to reduce moisture content to 15% or less.

6. The method as claimed in any one of claims 1 to 5, wherein the extract pressure is 100 bar to 300 bar.

7. The method as claimed in any one of claims 1 to 6, wherein the supercritical carbon dioxide extraction process is performed under an extract temperature ranging from 40 °C to 60 °C.

8. The method as claimed in any one of claims 1 to 7, wherein the liquid carbon dioxide is provided at a flow rate ranging from 5 kg/h to 30 kg/h for 10 minutes to 3 hours.

9. The method as claimed in any one of claims 1 to 8, wherein the step of separating is performed under a depressurized condition of about 40 bar.

10. The method as claimed in any one of claims 1 to 9, wherein the step of feeding the intermediate extract further comprises heating the intermediate extract at a temperature ranging from 40 °C to 60 °C into molten form.

11. The method as claimed in any one of claims 1 to 10, wherein the predetermined distillation temperature is ranging from 30 °C to 110 °C.

12. The method as claimed in any one of claims 1 to 11, wherein the predetermined vacuum pressure varies from 0.2 mbar to 1 mbar.

13. The method as claimed in any one of claims 1 to 12, wherein the predetermined rotational speed is ranging from 100 rpm to 140 rpm.

14. The method as claimed in any one of claims 1 to 13, wherein a first stage of the series of stages is set to the predetermined distillation temperature of about 60 °C and the predetermined rotational speed of about 100 rpm; a second stage of the series of stages is set to the predetermined distillation temperature of about 90 °C and the predetermined rotational speed of about 140 rpm; and a third stage of the series of stages is set to the predetermined distillation temperature of about 110 °C and the predetermined rotational speed of about 140 rpm.

15. The method as claimed in claim 14, wherein the first stage precedes the second stage, and the second stage precedes the third stage.

16. The method as claimed in any one of claims 1 to 15, wherein the botanical extract has an alcohol content of 25 % to 50 %.

17. An apparatus for preparing a botanical extract, the apparatus comprising:

a supercritical carbon dioxide extraction module configured to apply an extract pressure under influence of liquid carbon dioxide to a botanical material to perform a supercritical carbon dioxide extraction process to obtain an extraction mixture;

a separation module in fluidic communication with the supercritical carbon dioxide extraction module, the separation module configured to separate an intermediate extract from the extraction mixture; and

a molecular distillation module in fluidic communication with the separation module, the molecular distillation module comprising:

a series of stages configured to perform molecular distillation to obtain the botanical extract with an improved level of one or more parameters as compared to the intermediate extract; and

one or more pipes, each coupled between one stage of the series of stages and a subsequent stage of the series of stages,

wherein the one or more parameters comprise at least one of density, acid value, refractive index, appearance, or miscibility, and

each stage is operable with a predetermined distillation temperature, a predetermined vacuum pressure and a predetermined rotation speed,

wherein the supercritical carbon dioxide extraction module, the separation module and the molecular distillation module are operable to perform the supercritical carbon dioxide extraction process, separation of the intermediate extract and the molecular distillation continuously and not separately as different batches.

18. The apparatus as claimed in claim 17, wherein the separation module is further configured to perform separation under a depressurized condition of about 40 bar.

19. The apparatus as claimed in claim 17 or 18, further comprising a heating module configured to heat the intermediate extract at a temperature ranging from 40 °C to 60 °C into molten form.

20. The apparatus as claimed in any one of claims 17 to 19, wherein the one or more pipes is arranged to be heated to about 50 °C.

21. The apparatus as claimed in any one of claims 17 to 20, wherein the series of stages comprises a first stage configured to operate at the predetermined distillation temperature of about 60 °C and the predetermined rotational speed of about 100 rpm; a second stage configured to operate at the predetermined distillation temperature of about 90 °C and the predetermined rotational speed of about 140 rpm; and a third stage configured to operate at the predetermined distillation temperature of about 110 °C and the predetermined rotational speed of about 140 rpm.

22. The apparatus as claimed in claim 21, wherein the first stage precedes the second stage, and the second stage precedes the third stage.

23. A botanical extract prepared by performing a method as claimed in any one of claims 1 to 16.

24. The botanical extract as claimed in claim 23, having an alcohol content of 25 % to 50 %, or preferably 29% to 31%, or more preferably 40% to 50%.