CLAIMS

1. A process for the manufacture of an alcoholic beverage, wherein the process comprises the following steps carried out in sequence:

(a) forming an extraction mixture with an ethanol concentration of 20% or more by weight of ethanol by contacting a liquid extractant comprising from 21% to 100% by weight of ethanol with cellular material in a mass ratio of at least 1:4, thereby forming an extraction mixture;

(b) reducing in size the cellular material present in the extraction mixture at a temperature of from -114ºC to 5ºC;

(c) optionally, maintaining the extraction mixture at a temperature of from -114ºC to 0ºC for a time period of from 15 minutes to 5 years; and

(d) separating a portion or all of the cellular material from the extraction mixture thereby providing the alcoholic beverage; or separating a portion or all of the cellular material from the extraction mixture and optionally further treating the extraction mixture thereby providing the alcoholic beverage.

~~2. A process according to Claim 1, wherein the cellular material comprises one or more plants, or components or extracts thereof, preferably, wherein the one or more plants or components or extracts thereof comprise one or more edible fruits, vegetables, herbs, spices, components or extracts thereof, or a combination thereof.~~

2~~3~~. A process according to Claim 1~~ or Claim 2~~, wherein the liquid extractant comprises from 40% to 100% by weight of ethanol; preferably, wherein the liquid extractant comprises from 60% to 100% by weight of ethanol, and more preferably from 80% to 100% by weight of ethanol.

~~4. A process according to any preceding claim, wherein the liquid extractant comprises from 60% to 100% by weight of ethanol, and preferably from 80% to 100% by weight of ethanol.~~

~~5. A process according to any preceding claim, wherein (i) the liquid extractant comprises from 26% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 25% or more by weight of ethanol; and wherein the liquid extractant and cellular material are~~

~~contacted in step a) in a mass ratio of 1:3 to 9999:1; preferably (ii) the liquid extractant comprises from 31% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 30% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 3:7 to 9999:1; more preferably (iii) the liquid extractant comprises from 36% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 35% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 7:13 to 9999:1.~~

~~6. A process according to any preceding claim, wherein (i) the liquid extractant comprises from 41% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 40% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 2:3 to 9999:1; preferably (ii) the liquid extractant comprises from 51% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 50% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 1:1 to 9999:1; more preferably (iii) the liquid extractant comprises from 61% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 60% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 3:2 to 9999:1.~~

~~7. A process according to any preceding claim, wherein (i) the liquid extractant comprises from 60% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 20% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 1:4 to 9999:1; preferably (ii) the liquid extractant comprises from 60% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 25% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 1:3 to 9999:1; more preferably (iii) the liquid extractant comprises from 60% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 30% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 3:7 to 9999:1; and most preferably (iv) the liquid extractant comprises from 60% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 35% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 7:13 to 9999:1.~~

~~8. A process according to any preceding claim, wherein (i) the liquid extractant comprises from 60% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 40% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 2:3 to 9999:1; preferably (ii) the liquid extractant comprises from 70% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 40% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 2:3 to 9999:1; more preferably (iii) the liquid extractant comprises from 80% to 100% by weight of ethanol; the extraction mixture formed in step a) comprises 40% or more by weight of ethanol; and wherein the liquid extractant and cellular material are contacted in step a) in a mass ratio of 2:3 to 9999:1.~~

~~9. A process according to any preceding claim, wherein the liquid extractant further comprises water.~~

3~~10~~. A process according to any preceding claim, wherein the maintaining in step c) is carried out for a time period of from 1 hour to 168 hours, preferably from 12 hours to 72 hours, and more preferably from 18 hours to 30 hours; and/or wherein the maintaining in step c) is carried out at a temperature of from -114ºC to -5ºC, preferably from -80ºC to -10ºC, more preferably from -60ºC to -15ºC and most preferably from -35ºC to -15ºC.

~~11. A process according to any preceding claim, wherein the maintaining in step c) is carried out at a temperature of from -114ºC to -5ºC, preferably from -80ºC to -10ºC, more preferably from -60ºC to -15ºC and most preferably from -35ºC to -15ºC.~~

4~~12~~. A process according to any preceding claim, wherein step b) comprises reducing the size of the one or more organisms, or components or extracts thereof so as to comprise particles with a smallest dimension of 5mm or less, preferably 2 mm or less; and/or wherein step b) comprises reducing the size of the cellular material at a temperature of from -114ºC to 0ºC, preferably from -35ºC to 0ºC, more preferably from -35ºC to -5ºC and most preferably from -35ºC to -10ºC.

5~~13~~. A process according to any preceding claim, wherein step b) comprises lysing the cellular material so as to comprise lysed cells; wherein at least 25% of cells present in the cellular material are lysed, preferably wherein at least 50% of the cells present, more preferably

at least 75% of the cells present, and most preferably at least 90% of the cells present are lysed; preferably wherein step b) comprises blending the cellular material.

~~14. A process according to Claim 13, wherein at least 25% of cells present in the cellular material are lysed, preferably wherein at least 50% of the cells present, more preferably at least 75% of the cells present, and most preferably at least 90% of the cells present are lysed.~~

~~15. A process according to any preceding claim, wherein step b) comprises reducing the size of the cellular material at a temperature of from -114ºC to 0ºC, preferably from -35ºC to 0ºC, more preferably from -35ºC to -5ºC and most preferably from -35ºC to -10ºC.~~

~~16. A process according to any preceding claim, wherein step b) comprises blending the cellular material.~~

~~17~~16. A process according to any preceding claim, wherein the liquid extractant is at a temperature of from -114ºC to 0ºC, preferably from -35ºC to -5ºC and more preferably from -35ºC to -10ºC upon contact with the cellular material in step a); preferably wherein the liquid extractant and the cellular material are at a temperature of from -114ºC to 0ºC, preferably from -35ºC to -5ºC and more preferably from -35ºC to -10ºC upon contact in step a).

7~~18~~. A process according to any preceding claim, wherein the cellular material is already frozen upon contact with the liquid extractant in step a), or frozen during step a).

~~19. A process according to any preceding claim, wherein prior to step a), the cellular material is reduced in size, optionally, wherein cellular material is lysed, so as to comprise lysed cells, and optionally wherein at least 25% of cells present in the cellular material are lysed, preferably wherein at least 50% of the cells present, more preferably at least 75% of the cells present, and most preferably at least 90% of the cells present are lysed.~~

8~~20~~. A process according to any preceding claim, wherein step d) of separating a portion or all of the cellular material from the extraction mixture comprises filtering the extraction mixture, optionally (i) wherein the filtering step comprises pressing a solid portion of the cellular material present in the extraction mixture during filtering; preferably (ii) wherein the

extraction mixture is filtered at a temperature of from -114ºC to 5ºC, preferably from -50ºC to 0ºC, more preferably from -35ºC to -5ºC, and most preferably from -35ºC to -10ºC.

~~21. A process according to Claim 20, wherein the extraction mixture is filtered at a temperature of from -114ºC to 5ºC, preferably from -50ºC to 0ºC, more preferably from -35ºC to -5ºC, and most preferably from -35ºC to -10ºC.~~

9~~22~~. A process according to any preceding claim, wherein further treating the extraction mixture comprises diluting the extraction mixture, preferably wherein further treating the extraction mixture comprises diluting the extraction mixture with ice, more preferably wherein further treating the extraction mixture comprises blending the extraction mixture with ice; wherein the ethanol concentration after dilution is 20% or more by weight of ethanol, preferably 30% or more by weight of ethanol and most preferably 40% or more by weight of ethanol.

10~~23~~. A process according to Claim 9~~22~~, wherein during dilution, the extraction mixture is at a temperature of from -114ºC to 5ºC, preferably from -50ºC to 0ºC, more preferably from -35ºC to -5ºC, and most preferably from -35ºC to -10ºC.

11~~24~~. A process according to any preceding claim, wherein further treating the extraction mixture comprises distilling the extraction mixture to provide the alcoholic beverage, preferably wherein the distillation is carried out under vacuum.

~~25. A process according to any preceding claim, wherein the process further comprises the addition of carbon dioxide to the extraction mixture, optionally wherein the carbon dioxide is added to the extraction mixture in a mass ratio of 1:999 to 999:1 (mass of carbon dioxide: mass of the extraction mixture).~~

~~26. A process according to Claim 25, when dependent on any one of Claims 20 to 25, wherein step d) of separating a portion or all of the cellular material from the extraction mixture comprises blending the extraction mixture after filtering the extraction mixture.~~

12~~27~~. A process according to any preceding claim, wherein the alcoholic beverage is stored after manufacture at a temperature of from -114ºC to 5ºC, preferably from -50ºC to 0ºC, more

preferably from -35ºC to -5ºC, and most preferably from -35ºC to -10ºC, preferably wherein the alcoholic beverage is stored in the absence of oxygen; preferably wherein the alcoholic beverage is maintained at a temperature of less than 5°C and preferably less than 0°C until at least 24 hours, preferably 12 hours, more preferably 4 hours, and most preferably 1 hour prior to the consumption of the alcoholic beverage.

~~28. A process according to Claim 27, wherein the alcoholic beverage is maintained at a temperature of less than 5°C and preferably less than 0°C until at least 24 hours, preferably 12 hours, more preferably 4 hours, and most preferably 1 hour prior to the consumption of the alcoholic beverage.~~

13~~29~~. A process according to any preceding claim, wherein prior to step a), the cellular material is pulped or pressed into a liquid fraction and a solid pulp fraction, wherein the solid pulp fraction is used as the cellular material in step a).

~~30. A process according to any preceding claim, wherein step c), if present, comprises maintaining the extraction mixture at a temperature of from -35ºC to -5ºC; wherein step b) comprises reducing the size of the cellular material at a temperature of from -35ºC to 0ºC; wherein the liquid extractant and the cellular material are at a temperature of from -35ºC to 0ºC upon contact in step a); wherein step d) of separating a portion or all of the cellular material from the extraction mixture comprises filtering the extraction mixture at a temperature of from -35ºC to 0ºC; and wherein if the process further comprises a step of diluting the extraction mixture or storing the alcoholic beverage after manufacture, the dilution and storage are both carried out at from -35 to 0ºC; preferably, wherein step c), if present, comprises maintaining the extraction mixture at a temperature of from -35ºC to -15ºC; wherein step b) comprises reducing the size of the cellular material at a temperature of from -35ºC to -5ºC; wherein the liquid extractant and the cellular material are at a temperature of from -35ºC to -5ºC upon contact in step a); wherein step d) of separating a portion or all of the cellular material from the extraction mixture comprises filtering the extraction mixture, at a temperature of from -35ºC to -5ºC and wherein if the process further comprises a step of diluting the extraction mixture or storing the alcoholic beverage after manufacture, the dilution and storage are both carried out at from -35 to -5ºC.~~

1431. A process according to any preceding claim, wherein the process further comprises determining the water content of the cellular material, or the solid pulp fraction; preferably wherein the step of determining the water content of the cellular material or the solid pulp fraction comprises microwaving the cellular material or the solid pulp fraction thereby providing microwaved material, and determining the difference in weight between the microwaved material and the cellular material or the solid pulp fraction, wherein the difference in weight is indicative of the water content of the cellular material or the solid pulp fraction; more preferably wherein the cellular material or the solid pulp fraction are frozen prior to microwaving, optionally wherein the cellular material or the solid pulp fraction have a temperature of from -210ºC to 0ºC at the start of microwaving.

~~32. A process according to Claim 31, wherein the step of determining the water content of the cellular material or the solid pulp fraction comprises microwaving the cellular material or the solid pulp fraction thereby providing microwaved material, and determining the difference in weight between the microwaved material and the cellular material or the solid pulp fraction, wherein the difference in weight is indicative of the water content of the cellular material or the solid pulp fraction.~~

~~33. A process according to Claim 32, wherein the cellular material or the solid pulp fraction are frozen prior to microwaving, optionally wherein the cellular material or the solid pulp fraction have a temperature of from -210ºC to 0ºC at the start of microwaving.~~

1534. A process according to ~~any one of~~ Claim~~s 31 to 33~~14, wherein the process further comprises determining the ethanol concentration of the extraction mixture or alcoholic beverage from the determined water content of the cellular material or the solid pulp fraction; and the ethanol concentration of the liquid extractant; optionally wherein further treating the extraction mixture comprises diluting the extraction mixture, preferably wherein further treating the extraction mixture comprises diluting the extraction mixture with ice, and more preferably wherein further treating the extraction mixture comprises blending the extraction mixture with ice, wherein the process comprises determining the dilution necessary to provide a desired ethanol concentration of the alcoholic beverage, wherein the determining is based upon the ethanol concentration of the liquid extractant and the determined water content of the cellular material or the solid pulp fraction.

~~35. A process according to Claim 34, wherein further treating the extraction mixture comprises diluting the extraction mixture, preferably wherein further treating the extraction mixture comprises diluting the extraction mixture with ice, and more preferably wherein further treating the extraction mixture comprises blending the extraction mixture with ice, wherein the process comprises determining the dilution necessary to provide a desired ethanol concentration of the alcoholic beverage, wherein the determining is based upon the ethanol concentration of the liquid extractant and the determined water content of the cellular material or the solid pulp fraction.~~

16~~36~~. A process according to ~~any one of Claims 31 to 35~~Claim 14 or Claim 15, wherein the process comprises determining the weight ratio of the cellular material or the solid pulp fraction for use in step a) to the liquid extractant for use in step a) to achieve a desired alcohol concentration of the extraction mixture or alcoholic beverage, wherein the determining is based upon the ethanol concentration of the liquid extractant and the determined water content of the cellular material or the solid pulp fraction.

~~37. A process according to any preceding claim, wherein the alcoholic beverage comprises a neutral flavoured alcoholic beverage.~~

~~38. A process according to any preceding claim, wherein the process further comprises preparing the alcoholic beverage for consumption, wherein preparing the alcoholic beverage for consumption comprises bottling and sealing the alcoholic beverage within a container.~~

~~39. A process according to Claim 38, wherein the alcoholic beverage is bottled and sealed within the container whilst minimising the level of oxygen in the headspace.~~

~~40. A process according to Claim 39, wherein preparing the alcoholic beverage for consumption further comprises unsealing and opening the container at a temperature below 0ºC.~~

~~41. An alcoholic beverage obtained or obtainable by a process according to any preceding claim.~~

1742. Use of a liquid extractant comprising from 21% to 100% by weight of ethanol in the extraction of flavour providing compounds from cellular material; wherein the use comprises forming an extraction mixture with an ethanol concentration of 20% or more by weight of ethanol by contacting the liquid extractant comprising from 21% to 100% by weight of ethanol with cellular material in a mass ratio of at least 1:4, thereby forming an extraction mixture; reducing in size the cellular material present in the extraction mixture at a temperature of from -114ºC to 5ºC; optionally, maintaining the extraction mixture at a temperature of from -114ºC to 0ºC for a time period of from 15 minutes to 5 years; and (i) separating a portion or all of the cellular material from the extraction mixture thereby providing the alcoholic beverage, or (ii) separating a portion or all of the cellular material from the extraction mixture and optionally further treating the extraction mixture thereby providing the alcoholic beverage; preferably wherein the liquid extractant; extraction mixture; cellular material; or use are as defined in any one of Claims 1 to 16.

~~43. Use according to Claim 42, wherein the liquid extractant; extraction mixture; cellular material; or use are as defined in any one of Claims 1 to 40.~~

1844. A process for manufacturing an alcoholic beverage with a desired alcohol concentration (w), wherein the process comprises:

i) determining the water content (x) of cellular material;

ii) ~~providing~~ using a liquid extractant comprising ethanol, with an ethanol concentration (y); and

iii) either (a) contacting the cellular material and liquid extractant in a weight ratio (z) thereby forming the alcoholic beverage with the desired alcohol concentration (w), wherein the weight ratio (z) is selected based upon the determined water content (x) and the ethanol concentration (y), and wherein the weight ratio (z) is selected to provide the desired alcohol concentration (w) of the alcoholic beverage;

(b) contacting the cellular material and liquid extractant in a weight ratio (z) thereby forming an extraction mixture, wherein the weight ratio (z) is selected based upon the determined water content (x) and the ethanol concentration (y), and wherein the weight ratio (z) is selected to provide the desired alcohol concentration (w) of the alcoholic beverage; and separating a portion or all of the cellular material from the extraction mixture thereby providing the alcoholic beverage with a desired alcohol concentration (w);

(c) contacting the cellular material and liquid extractant in a weight ratio (z) thereby forming an extraction mixture; and adding one or more additional substances to the extraction mixture in a weight ratio (v) to provide the alcoholic beverage with alcohol concentration (w); wherein the weight ratio (v) is selected based upon the determined water content (x), the ethanol concentration (y) and the weight ratio (z), and wherein the weight ratio (v) is selected to provide the desired alcohol concentration (w) of the alcoholic beverage; or

(d) contacting the cellular material and liquid extractant in a weight ratio (z) thereby forming an extraction mixture; separating a portion or all of the cellular material from the extraction mixture; and adding one or more additional substances to the extraction mixture in a weight ratio (v) to provide the alcoholic beverage with alcohol concentration (w); wherein the weight ratio (v) is selected based upon the determined water content (x), the ethanol concentration (y) and the weight ratio (z), and wherein the weight ratio (v) is selected to provide the desired alcohol concentration (w) of the alcoholic beverage; optionally wherein the process is further defined as in any one of Claims 1 to 16.

19~~45~~. A process for manufacturing an alcoholic beverage comprising:

(a) determining the water content of cellular material;

(b) (i) contacting the cellular material with a liquid extractant comprising from 20% to 100% by weight of ethanol thereby forming an extraction mixture; and separating a portion or all of the cellular material from the extraction mixture thereby providing the alcoholic beverage; or

(ii) contacting the cellular material with a liquid extractant comprising from 20% to 100% by weight of ethanol thereby forming the alcoholic beverage; and

(c) determining the alcohol concentration of the alcoholic beverage based upon the water content of the cellular material and a water content of the liquid extractant; optionally wherein the process is further defined as in any one of Claims 1 to 16.

~~46. A process according Claim 44 or Claim 45, wherein the process is further defined as in any one of Claims 1 to 40.~~

~~47. A container comprising an alcoholic beverage that comprises from 20% to 100% alcohol by weight, more preferably from 30% to 100% alcohol by weight, wherein the~~

~~container comprises labelling specifying (i) the alcohol by weight content of the alcoholic beverage contained within the container; and/or (ii) the weight of the container when empty.~~

~~48. A container according to Claim 47 wherein:~~

~~(i) the container has a total capacity of from 20 ml to 3000 ml;~~

~~(ii) the alcoholic beverage comprises from 60% to 100% alcohol by weight, preferably from 96% to 100% alcohol by weight;~~

~~(iii) the alcoholic beverage comprises a neutral flavoured alcoholic beverage; and/or~~

~~(iv) the alcoholic beverage is according to Claim 41.~~

~~49. A sealed container with a total capacity of from 350 ml to 3000 ml, wherein the container comprises an alcoholic beverage comprising from 60% to 100% alcohol by weight; wherein the container comprises a weight *x* of the alcoholic beverage, such that an addition of 0.16 *x* of water at atmospheric pressure and 25ºC to the container does not cause the container to overflow.~~

~~50. A container according to Claim 49, wherein the container comprises a weight *x* of the alcoholic beverage, such that an addition of 0.31 *x*; preferably 0.53 *x*; and more preferably 0.83 *x* of water at atmospheric pressure and 25ºC to the container does not cause the container to overflow.~~

~~51. A container according to Claim 49 or 50, wherein the alcoholic beverage is according to Claim 41.~~

~~52. A container comprising a neutral flavoured alcoholic beverage that comprises from 25% to 100% alcohol by weight, wherein the container is capable of being sealed by a crown cap, and wherein the container comprises coloured glass that reflects light with a wavelength of from 495 nm to 620 nm.~~

~~53. A container according to Claim 52, wherein the container is sealed with a crown cap.~~

~~54. A container according to Claim 52, wherein the container is sealed with a stopper closure.~~

~~55. A container according to any one of Claims 52 to 54, further comprising a label comprising heat insulating material.~~

~~56. A container according to any one of Claims 52 to 55, wherein:~~

~~(i) the alcoholic beverage is according to Claim 41; or~~

~~(ii) the alcoholic beverage comprises from 40% to 100% alcohol by weight, preferably from 60% to 100% alcohol by weight.~~

~~57. A sealed container comprising an alcoholic beverage that comprises from 20% to 100% alcohol by weight, wherein the headspace of the container is substantially free of oxygen, and wherein the container comprises labelling with instructions stating that the container should be opened at a temperature of less than 0ºC, and preferably less than -10ºC.~~