CLAIMS

1. A method of manufacturing an isolated biological polysaccharide compound, the isolated biological polysaccharide compound comprising:

    glycosyl linkages comprising 1:3 linked glucopyranosyl residue of 65-95%wt and 1:6 linked glucopyranosyl residue of 5-25%wt;

    a purity of 85-100% β-D-glucan;

    a molecular weight of 0.5 to 2.2MDa; and,

    a TNF-alpha cytokine response in a human bioassay that is at least 1.5 times greater than a negative control TNF-alpha cytokine response in a human bioassay;

    wherein said isolated biological polysaccharide compound is essentially insoluble in aqueous solutions;

the method comprising:

    selecting yeast cells;

    lysing the yeast cells and collecting cell wall fragments;

    acidifying then heating the cell wall fragments to remove mannan and additional chitin;

    conducting phase separation with a solvent to remove additional mannan and chitin along with proteins, glycogen and lipids;

    separating solvent and other non-polysaccharide compounds via boiling and drying; and,

    performing at least one water rinse step after lysing and before acidifying.

2. The method as claimed in claim 1 where in the method further comprises at least one water rinse after said acidifying and before said phase separation.

3. The method as claimed in claim 1 further comprising, after acidifying and prior to said phase separation, changing pH and alcohol washing.

4. The method as claimed in claim 3 wherein the pH is reduced to 4.0 and said alcohol is washed, then increased to pH 9.0 and said alcohol is washed, then adjusted to pH 7.0 and said alcohol is washed.

5. The method as claimed in claim 1 wherein the method further comprises, post separation of the solvent and the other non-polysaccharide compounds via boiling and drying, further purifying through at least one additional series of solvent rinses, alcohol rinses and optionally, further water rinses before a final product is again dried.

6. The method as claimed in claim 1 wherein the yeast cells selected are from species *Saccharomyces cerevisiae.*

7. The method as claimed in claim 1 wherein lysing occurs via alkali treatment or heat treatment or both treatments.

8. The method as claimed in claim 3 wherein the alcohol used is selected from one or more lower alcohols.

9. The method as claimed in claim 3 wherein the alcohol used is selected from methanol, ethanol, propanol, and combinations thereof.

10. The method as claimed in claim 1 wherein the solvent used is: an organic solvent; and a non-polar solvent; and has a specific gravity greater than 1.0.

11. The method as claimed in claim 1 wherein the solvent is selected from: methyl chloroform, chloroform, dichloromethane, tetrachloroethane, carbon tetrachloride, ethyl acetate, and combinations thereof.

12. The method as claimed in claim 1 wherein the phase separation with said solvent is completed at room temperature and neutral pH.

13. The method as claimed in claim 1 wherein, post separation of the solvent and said other non-polysaccharide compounds via boiling and drying, dried polysaccharide produced is further purified through at least one additional series of solvent rinses, alcohol rinses and optionally, at least one additional series of water rinses before a final product is again dried.

14. The method as claimed in claim 13 wherein the at least one additional series of said solvent rinses and said alcohol rinses are carried out using: solvents selected from: methyl chloroform, chloroform, dichloromethane, tetrachloroethane, carbon tetrachloride, ethyl acetate, and combinations thereof; and alcohols selected from: methanol, ethanol, propanol, and combinations thereof.

15. The method as claimed in claim 13 wherein the at least one additional series of said water rinses are completed using water at a temperature of greater than 50°C.

16. The method as claimed in claim 1 wherein the isolated biological polysaccharide compound produced by the method is further characterised by a compound comprising additional side chains selected from one or more of: 1:4 linked glucopyranosyl residue; 3:4 linked glucopyranosyl residue; 2:3 linked glucopyranosyl residue; 3:6 linked glucopyranosyl residue; 2:6 and 4:6 linked glucopyranosyl residue; 3:4:6 linked glucopyranosyl residue; and/or terminal linked glucopyranosyl residue.

17. The method as claimed in claim 1 wherein the isolated biological polysaccharide compound produced by the method is further characterised by a compound comprising additional side chains comprising: 1:4 linked glucopyranosyl residue 2-6%; 3:4 linked glucopyranosyl residue 0.01-0.5%; 2:3 linked glucopyranosyl residue 0.5-4%; 3:6 linked glucopyranosyl residue 3-10%; 2:6 and 4:6 linked glucopyranosyl residue 0.2-1%; 3:4:6 linked glucopyranosyl residue 0.01-0.5%; and terminal linked glucopyranosyl residue 2-8%.

18. Use of a vehicle comprising an isolated biological polysaccharide compound in the non-therapeutic skin treatment of a subject, wherein the isolated biological polysaccharide compound comprises:

glycosyl linkages comprising 1:3 linked glucopyranosyl residue of 65-95%wt and 1:6 linked glucopyranosyl residue of 5-25%wt; and

a purity of 85-100% β-D-glucan; and

a molecular weight of 0.5 to 2.2 MDa; and

a TNF-alpha cytokine response in a human bioassay that is at least 1.5 times greater than a negative control TNF-alpha cytokine response in said human bioassay,

wherein the isolated biological polysaccharide compound is essentially insoluble in aqueous solutions.

19. A vehicle comprising a therapeutically effective amount of an isolated biological polysaccharide compound for use in the treatment of a skin wound, the isolated biological polysaccharide compound comprises:

glycosyl linkages comprising 1:3 linked glucopyranosyl residue of 65-95%wt and 1:6 linked glucopyranosyl residue of 5-25%wt; and

a purity of 85-100% β-D-glucan; and

a molecular weight of 0.5 to 2.2MDa; and

a TNF-alpha cytokine response in a human bioassay that is at least 1.5 times greater than a negative control TNF-alpha cytokine response in said human bioassay,

wherein the isolated biological polysaccharide compound is essentially insoluble in aqueous solutions.

20. Use of a vehicle comprising a therapeutically effective amount of an isolated biological polysaccharide compound in the manufacture of a medicament for the treatment of a skin wound, wherein the isolated biological polysaccharide compound comprises

glycosyl linkages comprising 1:3 linked glucopyranosyl residue of 65-95%wt and 1:6 linked glucopyranosyl residue of 5-25%wt; and

a purity of 85-100% β-D-glucan; and

a molecular weight of 0.5 to 2.2MDa; and

a TNF-alpha cytokine response in a human bioassay that is at least 1.5 times greater than a negative control TNF-alpha cytokine response in said human bioassay,

wherein the isolated biological polysaccharide compound is essentially insoluble in aqueous solutions.

21. The use of any one of claims 18 to 20, wherein the vehicle is a gel composition.

22. The use of claim 21, wherein the gel composition is an aqueous gel, and the isolated biological polysaccharide compound is in micro-particulate form and suspended in the aqueous gel.

23. The use of claim 21, wherein the gel composition comprises a viscosity greater than 3000cps.

24. The use of claim 21, wherein the gel composition is free of any chemical preservatives.

25. The use of any one of claims 18 to 20, wherein the vehicle comprises 0.05-1.5%wt of the isolated biological polysaccharide compound.

26. The use of any one of claims 18 to 20, wherein the vehicle comprises 0.1-1.0%wt of the isolated biological polysaccharide compound.

27. The use of any one of claims 18 to 20, wherein the vehicle is to be applied to the skin or skin wound as a layer from 1-5mm thick, and, over time, the layer is absorbed into the skin.

28. The use of any one of claims 18 to 20, wherein the molecular weight is of 0.5 to 1.7MDa.

29. The use of claim 18, wherein the vehicle is used topically as a cosmetic skin treatment.

30. The use of claim 29, wherein the vehicle is used to improve healed skin elastosis and wrinkling.

31. The use of claim 18, wherein the vehicle is used in a treatment of skin post fractionated and/or fully ablative skin resurfacing.

32. The use of claim 18, wherein the vehicle is used as an adjunctive post-procedure topically applied gel to accelerate skin quality benefits.

33. The use of claim 19 or 20, wherein the skin wound is a chronic wound.

34. The use of claim 33, wherein the chronic wound is an ulcer.

35. The use of claim 34, wherein the ulcer is a venous leg ulcer.

36. An isolated biological polysaccharide compound comprising:

glycosyl linkages comprising 1:3 linked glucopyranosyl residue of 65-95%wt of the isolated biological polysaccharide compound and 1:6 linked glucopyranosyl residue of 5-25%wt of the isolated biological polysaccharide compound;

a purity of 85-100% β-D-glucan;

a molecular weight of 0.5 to 2.2MDa;

a TNF-alpha cytokine response in a human bioassay that is at least 1.5 times greater than a negative control TNF-alpha cytokine response in the human bioassay; and,

additional side chains comprising

1:4 linked glucopyranosyl residue 2-6% of the isolated biological polysaccharide compound;

3:4 linked glucopyranosyl residue 0.01-0.5% of the isolated biological polysaccharide compound;

2:3 linked glucopyranosyl residue 0.5-4% of the isolated biological polysaccharide compound;

3:6 linked glucopyranosyl residue 3-10% of the isolated biological polysaccharide compound;

2:6 and 4:6 linked glucopyranosyl residue 0.2-1% of the isolated biological polysaccharide compound;

3:4:6 linked glucopyranosyl residue 0.01-0.5% of the isolated biological polysaccharide compound; and

terminal linked glucopyranosyl residue 2-8% of the isolated biological polysaccharide compound; and

wherein said isolated biological polysaccharide compound is insoluble in aqueous solutions.

37. The isolated biological polysaccharide compound as claimed in claim 36, wherein the isolated biological polysaccharide compound is derived from yeast cells of a species *Saccharomyces cerevisiae.*

38. The isolated biological polysaccharide compound as claimed in claim 36, wherein the purity is 90-100% β-D-glucan.

39. The isolated biological polysaccharide compound as claimed in claim 36, further comprising less than or equal to 3%wt. of protein content.

40. The isolated biological polysaccharide compound as claimed in claim 36, further comprising less than or equal to 0.3%wt. of protein content.

41. The isolated biological polysaccharide compound as claimed in claim 36, further comprising less than or equal to 3%wt. of lipid content.

42. The isolated biological polysaccharide compound as claimed in claim 36, further comprising less than or equal to 0.3%wt. of lipid content.

43. The isolated biological polysaccharide compound as claimed in claim 36, wherein the isolated biological polysaccharide compound is sterile and further comprises a microbiological count of <10cfu/g plus an absence of pathogens.

44. The isolated biological polysaccharide compound as claimed in claim 36, wherein the isolated biological polysaccharide compound is in micro-particulate form.

45. The isolated biological polysaccharide compound as claimed in claim 44, wherein a particle size of the micro-particulate form is less than 40 μm.

46. The isolated biological polysaccharide compound as claimed in claim 36, wherein the isolated biological polysaccharide compound is shelf stable for at least 1 year after storage at ambient temperature.

47. The isolated biological polysaccharide compound as claimed in claim 36, wherein the isolated biological polysaccharide compound is incorporated in a vehicle configured to be topically applied to a wound site, and wherein the vehicle comprises a therapeutically effective amount of the isolated biological polysaccharide compound.

48. The isolated biological polysaccharide compound as claimed in claim 47, wherein the vehicle is a gel.

49. The isolated biological polysaccharide compound as claimed in claim 48, wherein the gel is an aqueous gel, and wherein the isolated biological polysaccharide compound is in micro-particulate form and is suspended in the gel.

50. The isolated biological polysaccharide compound as claimed in claim 47, wherein the vehicle comprises 0.05-1.5%wt of the isolated biological polysaccharide compound.

51. The isolated biological polysaccharide compound as claimed in claim 36, wherein the glycosyl linkages are 1:3 linked glucopyranosyl residue of 65-85%wt of the isolated biological polysaccharide compound and 1:6 linked glucopyranosyl residue of 15-25%wt of the isolated biological polysaccharide compound.

52. The isolated biological polysaccharide compound as claimed in claim 36, wherein the purity is 95-100% β-D-glucan.