

Claims

1. An okara-based probiotic beverage comprising probiotics, soluble dietary fibre, free isoflavones and esters, wherein the probiotic bacteria has a cell count of $\geq 5.0 \log$ CFU/mL.
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2. The beverage according to claim 1, wherein after 6 weeks of storage, the probiotics comprised in the beverage has a cell count of $\geq 5 \log$ CFU/mL and retains at least: 70% of the soluble dietary fibre; 90% of the free isoflavones; and 20% of the esters.
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3. The beverage according to claim 1 or 2, wherein the probiotics comprises lactobacilli, bifidobacteria, *Saccharomyces* yeast, or a combination thereof.
- 15 4. The beverage according to any preceding claim, wherein the probiotics comprised in the beverage is lactobacilli selected from: *Lactobacillus (Lb.) acidophilus*, *Lb. casei*, *Lb. paracasei*, *Lb. rhamnosus*, *Lb. helveticus*, *Lb. plantarum*, or a combination thereof.
- 20 5. The beverage according to any preceding claim, wherein the probiotics has a cell count of $\geq 6.0 \log$ CFU/mL.
6. The beverage according to any preceding claim, wherein the beverage comprises $0.1 - 100 \mu\text{g}$ esters/g dried okara.
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7. The beverage according to any preceding claim, wherein the beverage comprises $50 - 500 \mu\text{g}$ free isoflavones/g dried okara.
8. The beverage according to any preceding claim, wherein the beverage may further comprise an additive.
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9. A method of forming okara-based probiotic beverage according to any of claims 1 to 8, the method comprising:

- treating okara with carbohydrase to form treated okara;
- adding probiotics and a yeast to the treated okara; and
- fermenting the treated okara for a pre-determined period of time and at a pre-determined temperature to form the okara-based probiotic beverage.

10. The method according to claim 9, wherein the method is a zero-waste method.

11. The method according to claim 9 or 10, wherein the treating comprises carbohydrase hydrolysis.

12. The method according to any of claims 9 to 11, wherein the carbohydrase comprises: cellulase, hemicellulase, pectinase, pentosanase, arabanase, xylanase, mannase, glycosidase, or a combination thereof.

13. The method according to any of claims 9 to 12, wherein the probiotics comprises lactobacilli, bifidobacteria, *Saccharomyces* yeast, or a combination thereof.

14. The method according to any of claims 9 to 13, wherein the probiotics comprised in the beverage is a lactobacilli selected from: *Lactobacillus* (*Lb.*) *acidophilus*, *Lb. casei*, *Lb. paracasei*, *Lb. rhamnosus*, *Lb. helveticus*, *Lb. plantarum*, or a combination thereof.

15. The method according to any of claims 9 to 14, wherein the yeast is *Saccharomyces* yeast, non-*Saccharomyces* yeast, or a combination thereof.

16. The method according to any of claims 9 to 15, wherein the yeast is *Saccharomyces* (*S.*) *cerevisiae*, *Torulaspora* (*T.*) *delbrueckii*, *Pichia* (*P.*) *kluuyveri*, *Lindnera* (*L.*) *saturnus*, or a combination thereof.

17. The method according to any of claims 9 to 16, wherein the adding comprises adding probiotics to obtain an initial probiotic count of 7 log CFU probiotics/mL.

18. The method according to any of claims 9 to 17, wherein the adding comprises adding yeast to obtain an initial yeast count of 5 log CFU yeast/mL.

19. The method according to any of claims 9 to 18, wherein the pre-determined
5 period of time is 8-96 hours.

20. The method according to any of claims 9 to 19, wherein the pre-determined temperature is 15-45°C.

10 21. The method according to any of claims 9 to 20, further comprising adjusting pH of the okara prior to the treating.

22. The method according to any of claims 9 to 21, further comprising heat-treating the okara prior to the treating.

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23. The method according to any of claims 9 to 22, further comprising cooling the treated okara to the pre-determined temperature prior to the adding.