CLAIMS

What is claimed is:

1 . Method of preparing D-psicose comprising the steps of:

(i) providing a mixture of D-psicose and D-fructose; and

(ii) contacting the mixture of D-psicose and D-fructose with a probiotic microorganism that is capable of metabolizing D-fructose but not D-psicose and capable of converting D-fructose into L-lactic acid and subjecting the microorganism to culture conditions that allow fermentative removal of D-fructose from the mixture of D-psicose and D-fructose with concomitant production of L-lactic acid, wherein the probiotic microorganism that is selective for D-fructose and capable of converting D-fructose into L-lactic acid is *Lactobacillus rhamnosus* GG.

2. The method of claim 1 , wherein the mixture of D-psicose and D-fructose is provided by enzymatically converting D-fructose into D-psicose by a D-psicose 3-epimerase (DPEase) that is a member of EC 5.1.3.30 [EC 5.1 .3.30], D-tagatose 3-epimerase (DTEase) that is a member of EC 5.1.3.31 [EC 5.1 .3.31], or a cell comprising said DPEase or DTEase.

3. The method of claim 2, wherein the cell comprising said DPEase or DTEase is a recombinant cell.

4. The method of claim 2 or 3, wherein the DPEase is of *Agrobacterium tumefaciens* origin.

5. The method of any one of claims 2-4, wherein the DPEase has the amino acid sequence set forth in any one of SEQ ID NOs:1 -3.

6. The method of any one of claims 1 -5, wherein the probiotic microorganism that is capable of metabolizing D-fructose but not D-psicose and capable of converting D-fructose into L-lactic acid is of the Lactobacillus or Saccharomyces genus, preferably Lactobacillus rhamnosus GG or Saccharomyces boulardii , more preferably Lactobacillus rhamnosus GG.

76. The method of claims 1–6, wherein the fermentative removal of D-fructose is carried out

(1) at a pH range between 6.5 and 7.5, preferably at pH 7.5; and/or

(2) at an initial total concentration of D-psicose and D-fructose of 200 g/L or less, preferably 180 g/L or less.

87. The method of any one of claims 1–7, wherein in the mixture of D-fructose and D-psicose the weight ratio of D-fructose to D-psicose is selected from at least 1 :1 , preferably at least 1 .5:1 , more preferably at least 2:1 .

98. The method of any one of claims 1 to 8, wherein step (ii) is carried out under conditions and for a period of time that allows the microorganism to metabolize substantially all D-fructose from the mixture.

109. The method of any one of claims 1 to 9, wherein the method further comprises the step (iii) of isolating the D-psicose, preferably by centrifugation and/or chromatography.

11. Use of a probiotic microorganism that is capable of metabolizing D-fructose but not D- psicose and capable of converting D-fructose into L-lactic acid for fermentative removal of D- fructose from a mixture of D-psicose and D-fructose.

12. The use of claim 1 1 , wherein the probiotic microorganism that is selective for D-fructose and capable of converting D-fructose into L-lactic acid is Lactobacillus rhamnosus GG or Saccharomyces boulardii , preferably Lactobacillus rhamnosus GG.

10. The method of claim 6, wherein the fermentative removal of D-fructose is carried out at an initial total concentration of D-psicose and D-fructose of 200 g/L or less.

11. The method of claim 9, wherein isolating the D-psicose is by centrifugation.

12. The method of claim 9, wherein isolating the D-psicose is by chromatography.

13. The method of claim 1, wherein in the mixture of D-fructose and D-psicose the weight ratio of D-fructose to D-psicose is selected from at least 1.5:1.

14. The method of claim 1, wherein in the mixture of D-fructose and D-psicose the weight ratio of D-fructose to D-psicose is selected from at least 2:1.

15. Method for fermentative removal of D-fructose from a mixture of D-psicose and D-fructose comprising:

using a probiotic microorganism that is capable of metabolizing D-fructose but not D-psicose and capable of converting D-fructose into L-lactic acid for fermentative removal of D-fructose from a mixture of D-psicose and D-fructose, wherein the probiotic microorganism that is selective for D-fructose and capable of converting D-fructose into L-lactic acid is *Lactobacillus rhamnosus* GG.