CLAIMS

1. A composition for producing psicose, comprising a psicose-6-phosphate phosphatase consisting of any one of amino acid sequences of SEQ ID NOS: 1, 6, 9, 12 to 14, 17, 18, 20 to 23, 25, 26, 28, 29, 37 to 53, 55 to 57, 59 to 61, 64 to 66, 69, 70, 72, 73, 76, 77, 80, 81, 85, 88, 91, 93, 95, 99, 100, 102, 104, 105, 108, 114, 116, 117, 122, 131, 133, 134, 136, 142 to 148, 150 to 152, 154 to 156, 159 to 164, 167, 169, 172, 173, 175, 177, 184 to 187, 189, 191, 192, 195, 198, 205, 210, 211, 214, 216, 217, and 221, a microorganism expressing the same, or a culture of the microorganism.

2. The composition of claim 1, wherein the psicose-6-phosphate phosphatase consists of any one of amino acid sequences of SEQ ID NOS: 1, 6, 9, 12, 26, 29, 38 to 43, 45 to 53, 56, 57, 59, 60, 64 to 66, 69, 70, 72, 76, 80, 81, 91, 93, 95, 99, 100, 102, 114, 116, 117, 131, 134, 136, 142, 145, 146, 148, 164, 167, 169, 172, 177, 184 to 187, 189, 191, 192, 211, 217, and 221.

3. The composition of claim 1, wherein the psicose-6-phosphate phosphatase exhibits an activity selective to psicose-6-phosphate.

4. The composition of claim 1, wherein the composition further comprises a sugar phosphate.

5. A method for producing psicose, comprising converting psicose-6-phosphate into psicose by bringing psicose-6-phosphate into contact with a psicose-6-phosphate phosphatase consisting of any one of amino acid sequences of SEQ ID NOS: 1, 6, 9, 12 to 14, 17, 18, 20 to 23, 25, 26, 28, 29, 37 to 53, 55 to 57, 59 to 61, 64 to 66, 69, 70, 72, 73, 76, 77, 80, 81, 85, 88, 91, 93, 95, 99, 100, 102, 104, 105, 108, 114, 116, 117, 122, 131, 133, 134, 136, 142 to 148, 150 to 152, 154 to 156, 159 to 164, 167, 169, 172, 173, 175, 177, 184 to 187, 189, 191, 192, 195, 198, 205, 210, 211, 214, 216, 217, and 221, a microorganism expressing the same, or a culture of the microorganism.

6. The method of claim 5, wherein the method further comprises converting fructose-6-phosphate into psicose-6-phosphate by bringing fructose-6-phosphate into contact with fructose-6-phosphate-3-epimerase, a microorganism expressing the same, or a culture of the microorganism, prior to the converting psicose-6-phosphate into

psicose.

7. The method of claim 6, wherein the method further comprises converting glucose-6-phosphate into fructose-6-phosphate by bringing glucose-6-phosphate into contact with glucose-6-phosphate-isomerase, a microorganism expressing the same, or a culture of the microorganism, prior to the converting fructose-6-phosphate into psicose-6-phosphate.

8. The method of claim 7, wherein the method further comprises converting glucose-1-phosphate into glucose-6-phosphate by bringing glucose-1-phosphate into contact with phosphoglucomutase, a microorganism expressing the same, or a culture of the microorganism, prior to the converting glucose-6-phosphate into fructose-6-phosphate.

9. The method of claim 7, wherein the method further comprises converting glucose into glucose-6-phosphate by bringing glucose into contact with polyphosphate glucokinase, a microorganism expressing the same, or a culture of the microorganism, and polyphosphate, prior to the converting glucose-6-phosphate into fructose-6-phosphate.

10. The method of claim 8, wherein the method further comprises converting starch, maltodextrin, sucrose, or a combination thereof into glucose-1-phosphate by bringing starch, maltodextrin, sucrose, or a combination thereof into contact with α-glucan phosphorylase, starch phosphorylase, maltodextrin phosphorylase, or sucrose phosphorylase; a microorganism expressing the same; or a culture of the microorganism, and phosphate, prior to the converting glucose-1-phosphate into glucose-6-phosphate.

11. The method of claim 10, wherein the converting starch, maltodextrin, sucrose, or a combination thereof into glucose-1-phosphate further comprises converting starch, maltodextrin, sucrose, or a combination thereof into a maltooligosaccharide or glucose by further comprising α-amylase, pullulanase, isoamylase, α-glucanotransferase, glucoamylase, or sucrase; a microorganism expressing the same; or a culture of the microorganism.

12. A method for producing psicose, comprising bringing starch, maltodextrin, sucrose, or

a combination thereof and phosphate into contact with (a) psicose-6-phosphate phosphatase; fructose-6-phosphate-3-epimerase; glucose-6-phosphate-isomerase; phosphoglucomutase or glucokinase; and α-glucan phosphorylase, starch phosphorylase, maltodextrin phosphorylase, sucrose phosphorylase, α-amylase, pullulanase, isoamylase, glucoamylase, α-glucanotransferase, polyphosphate glucokinase, or sucrase; or (b) a microorganism expressing the enzymes of item (a) or a culture of the microorganism, wherein the psicose-6-phosphate phosphatase consists of any one of amino acid sequences of SEQ ID NOS: 1, 6, 9, 12 to 14, 17, 18, 20 to 23, 25, 26, 28, 29, 37 to 53, 55 to 57, 59 to 61, 64 to 66, 69, 70, 72, 73, 76, 77, 80, 81, 85, 88, 91, 93, 95, 99, 100, 102, 104, 105, 108, 114, 116, 117, 122, 131, 133, 134, 136, 142 to 148, 150 to 152, 154 to 156, 159 to 164, 167, 169, 172, 173, 175, 177, 184 to 187, 189, 191, 192, 195, 198, 205, 210, 211, 214, 216, 217, and 221.

13. The method of any one of claims 6 to 12, the contact is performed at a pH of 5.0 to 9.0, at a temperature of 40°C to 80°C, and/or for 2 hours to 24 hours or 120 hours.

14. The method of claim 5, wherein the psicose-6-phosphate phosphatase consists of any one of amino acid sequences of SEQ ID NOS: 1, 6, 9, 12, 26, 29, 38 to 43, 45 to 53, 56, 57, 59, 60, 64 to 66, 69, 70, 72, 76, 80, 81, 91, 93, 95, 99, 100, 102, 114, 116, 117, 131, 134, 136, 142, 145, 146, 148, 164, 167, 169, 172, 177, 184 to 187, 189, 191, 192, 211, 217, and 221.

15. The method of claim 5, wherein the psicose-6-phosphate phosphatase exhibits an activity selective to psicose-6-phosphate.