In accordance with this surprising finding, the present disclosure relates to novel LAB *strains* with improved texturizing properties, and a method for producing such strains, and to fermented milk products made using such strains.

In one aspect of the present invention, there is provided a method of producing a fermented milk product comprising fermenting a milk substrate with a lactic acid bacterium (LAB) mutant strain, wherein the LAB mutant increases the viscosity of the fermented milk product, and wherein the LAB mutant is selected from the group consisting of

a) a LAB which contains less than 10 ppm (parts per million, mg/Kg dry weight) of iron ions (e.g. Fe2+), such as less than 9, less than 8 ppm, less than 6 or less than 3 ppm;

b) a LAB which contains less than 6 ppm (parts per million, mg/Kg dry weight) of Manganese ions (e.g. Mn2+), such as less than 5.5, less than 5.2 ppm, less than 5 ppm, less than 4 or less than 2 ppm;

c) a LAB which contains less than 16 ppm (parts per million, mg/Kg dry weight) in total of Fe2+ and Mn2+, such as less than 15, less than 14 ppm, less than 13 ppm, less than 10 or less than 7 ppm;

d) a LAB carrying a mutation in the divalent metal ion ABC uptake system (NRAMP);

e) a LAB which has a reduced expression of the *fur* gene caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene;

f) a LAB which has a reduced expression of an *mnth* gene caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene;

g) a LAB which has a reduced expression of the fatc gene or the divalent metal ion ABC uptake system (NRAMP) caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene; and

h) a LAB, which is resistant to tellurite, wherein a tellurite resistant mutant means a mutant which is able to grow (form a colony) on M17 agar plates containing 0.1 mM K2TeO3.

In another aspect of the present disclosure, there is provided a *Streptococcus thermophilus* strain selected from the group consisting of the *Streptococcus thermophilus* strain CHCC15712 (DSM25955) and a mutant of this strain with the same or improved properties with respect to EPS production, and wherein less than 0.1 % of the nucleotides in the bacterial genome of the mutant have been changed.

CLAIMS

1. A method of producing a fermented milk product comprising fermenting a milk substrate with a lactic acid bacterium (LAB) mutant strain, wherein the LAB mutant increases the viscosity of the fermented milk product, and wherein the LAB mutant is selected from the group consisting of

a) a LAB which contains less than 10 ppm (parts per million, mg/Kg dry weight) of iron ions (e.g. Fe2+), such as less than 9, less than 8 ppm, less than 6 or less than 3 ppm;

b) a LAB which contains less than 6 ppm (parts per million, mg/Kg dry weight) of Manganese ions (e.g. Mn2+), such as less than 5.5, less than 5.2 ppm, less than 5 ppm, less than 4 or less than 2 ppm;

c) a LAB which contains less than 16 ppm (parts per million, mg/Kg dry weight) in total of Fe2+ and Mn2+, such as less than 15, less than 14 ppm, less than 13 ppm, less than 10 or less than 7 ppm;

d) a LAB carrying a mutation in the divalent metal ion ABC uptake system (NRAMP);

e) a LAB which has a reduced expression of the *fur* gene caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene;

f) a LAB which has a reduced expression of an *mnth* gene caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene;

g) a LAB which has a reduced expression of the fatc gene or the divalent metal ion ABC uptake system (NRAMP) caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene; and

h) a LAB, which is resistant to tellurite, wherein a tellurite resistant mutant means a mutant which is able to grow (form a colony) on M17 agar plates containing 0.1 mM K2TeO3.

2. The method according to claim 1, wherein the LAB mutant is selected from the group consisting of

a) a LAB which contains less than 10 ppm (parts per million, mg/Kg dry weight) of iron ions (e.g. Fe2+), such as less than 9, less than 8 ppm, less than 6 or less than 3 ppm;

b) a LAB which contains less than 6 ppm (parts per million, mg/Kg dry weight) of Manganese ions (e.g. Mn2+), such as less than 5.5, less than 5.2 ppm, less than 5 ppm, less than 4 or less than 2 ppm; and

c) a LAB which contains less than 16 ppm (parts per million, mg/Kg dry weight) in total of Fe2+ and Mn2+, such as less than 15, less than 14 ppm, less than 13 ppm, less than 10 or less than 7 ppm.

3. The method according to claim 1, wherein the LAB mutant is selected from the group consisting of

d) a LAB carrying a mutation in the divalent metal ion ABC uptake system (NRAMP);

e) a LAB which has a reduced expression of the *fur* gene caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene;

f) a LAB which has a reduced expression of an *mnth* gene caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene;

g) a LAB which has a reduced expression of the fatc gene or the divalent metal ion ABC uptake system (NRAMP) caused by a partly or full inactivation of the gene, deletion of the gene or parts thereof and/or insertion of additional DNA into the gene; and

h) a LAB, which is resistant to tellurite, wherein a tellurite resistant mutant means a mutant which is able to grow (form a colony) on M17 agar plates containing 0.1 mM K2TeO3.

4. The method according to any of the preceding claims, wherein the LAB has a perturbed divalent metal ion metabolism (DMIM).

5. The method according to any of the preceding claims, wherein the divalent metal ion is selected from the group consisting of Fe2+, Mg2+, and Mn2+.

6. The method according to any of the preceding claims, wherein the LAB has been obtained by mutagenesis, and/or by genetic engineering.

7. The method according to any of the preceding claims, wherein the LAB has been obtained by growth in a medium having a concentration of divalent metal ions selected from the group consisting of Fe2+ and Mn2+, of below 0.25 microgram/gram, such as below 0.2 µg/g.

8. The method according to any of the preceding claims, wherein the LAB belongs to the species *Lactobacillus bulgaricus*.

9. The method according to any of the preceding claims, wherein the LAB belongs to the species *Streptococcus thermophilus*.

10. The method according to any of the preceding claims, wherein the LAB generates a viscosity greater than about 50 Pa.s in milk, measured as shear stress after 16 hours of growth of the bacterium in 9.5% reconstituted skim milk at 37 degrees Celcius, when the milk is inoculated with 10E8 CFU per ml.

11. A *Streptococcus thermophilus* strain selected from the group consisting of the *Streptococcus thermophilus* strain CHCC15712 (DSM25955) and a mutant of this strain with the same or improved properties with respect to EPS production, and wherein less than 0.1 % of the nucleotides in the bacterial genome of the mutant have been changed.

12. The composition comprising a LAB (lactic acid bacterium) of claim 11.

13. A composition comprising a LAB (lactic acid bacterium), said composition further comprises a metal ion chelator.

14. The method for producing a fermented milk product comprising fermenting a milk substrate with a strain of claim 11, or a composition of claim 12.

15. A method for producing a fermented milk product comprising fermenting a milk substrate having a Fe2+ concentration below 0.25 µg/g with a LAB (lactic acid bacterium).

16. A method for improving the EPS production of a LAB (lactic acid bacterium) strain, which is able to produce EPS, said method comprising growing the LAB strain in a medium, wherein Fe2+ ions has been removed from the medium before, during or after inoculation with the strain, wherein the resulting mpedium has a concentration of Fe2+ ions below 0.25 µg/g.

17. A method for improving the EPS production of a LAB (lactic acid bacterium) strain, which is able to produce EPS, said method comprising growing the LAB strain in a medium, wherein Mn2+ ions has been removed from the medium before, during or after inoculation with the strain, wherein the resulting medium has a concentration of Mn2+ ions below 0.025 µg/g.