

CLAIMS

1. A method of selecting a lactic acid bacterial strain capable of utilizing ethanolamine, said method comprising the steps of:
 - 5 i) providing bacteria of a lactic acid bacterial strain in a culture medium and growing a culture of said bacteria,
 - ii) determining if said bacteria are capable of utilizing ethanolamine; and
 - iii) selecting said lactic acid bacterial strain if said bacteria are capable of utilizing ethanolamine,
- 10 wherein said culture medium comprises an amount or concentration of ethanolamine and/or an amount or concentration of ethanolamine is added to the culture of step i) at a point in time before step ii).
2. The method of claim 1, wherein said method further comprises adding to the culture of step i) a further amount or concentration of ethanolamine at a
15 second point in time and growing said culture before performing steps ii) and iii) of said method.
3. The method of any one of claims 1 to 2, wherein step i) is preceded by performing an initial screening of said lactic acid bacteria for the presence of one or more gene(s) encoding bacterial homologues of one or more of the
20 genes encoding any of the proteins selected from the group consisting of: ethanolamine ammonia lyase large subunit EutB, microcompartment structural protein EutL and Ethanolamine utilization protein EutH in said lactic acid bacteria.
4. The method of claim 3, wherein said method further comprises performing a
25 screening to determine the presence of a bacterial homologue of the gene encoding NADPH-dependent FMN reductase belonging to the pfam03358 protein family and/or a gene encoding Protein-tyrosine-phosphatase belonging to the pfam13350 protein family.
5. The method of any one of claims 1 to 4, wherein step ii) comprises
30 determining if said lactic acid bacteria are capable of producing acetaldehyde, by measuring an amount or concentration of acetaldehyde in a culture sample from said bacterial culture.

6. The method of any one of claims 1 to 5, wherein the amount or concentration of ethanolamine in or added to said culture medium of step i) is about 0.1 mM to about 50 mM, or about 1 to about 30 mM.
7. The method of any one of claims 2-6, wherein the further amount or concentration of ethanolamine added to said culture is about 1mM to about 1M, or about 30 mM to about 1M.
8. The method of any one of the preceding claims, wherein said lactic acid bacteria are bacteria of the genus *Lactobacillus*.
9. The method of claim 8, wherein said lactic acid bacteria are bacteria of the species *Lactobacillus reuteri*.
10. Lactic acid bacteria selected by the method of any one of the preceding claims.
11. A method of producing lactic acid bacteria induced to utilize ethanolamine, said method comprising the steps of:
 - i) providing lactic acid bacteria capable of utilizing ethanolamine in a culture medium,
 - ii) adding to the culture medium of step i) a first amount or concentration of ethanolamine at a first point in time and growing said culture,
 - iii) optionally adding to the culture of step ii) a second amount or concentration of ethanolamine at a second point in time and growing said culture, and thereafter;
 - iv) retrieving the lactic acid bacteria from said culture medium.
12. The method of claim 11, wherein the first amount or concentration of ethanolamine added to said culture in step ii) of is about 0.1mM to about 50 mM, or about 1 mM to about 30 mM.
13. The method of any one of claims 11 to 12, wherein the second amount or concentration of ethanolamine added to said culture in step iii) is about 1mM to about 1 M, or about 30 mM to about 1M.
14. The method of any one of claims 11 to 13, wherein said lactic acid bacteria are bacteria of the genus *Lactobacillus*.
15. The method of claim 14, wherein said lactic acid bacteria are bacteria of the species *Lactobacillus reuteri*.
16. Lactic acid bacteria produced by a method according to any one of claims 11-15.

17. Lactic acid bacteria of claim 10 or 16 for use in inhibiting the growth of pathogenic bacteria in the gastrointestinal tract of an individual.
18. Lactic acid bacteria of claim 10 or 16, for use as a medicament.
19. Lactic acid bacteria of claim 18, for use in the treatment of a condition or disorder caused by or related to an ethanolamine-utilizing pathogen.
20. Lactic acid bacteria of claim 19, wherein said ethanolamine-using pathogen is selected from the group consisting of *Clostridium difficile*, *Escherichia coli*, Enterohemorrhagic *Escherichia coli*, *Salmonella typhimurium*, *Salmonella enterica* serovar *Typhimurium*, *Shigella sonnei*, *Shigella dysenteriae*, *Klebsiella pneumonia*, *Citrobacter koseri*, *Pseudomonas aeruginosa*, *Clostridium perfringens*, *Clostridium difficile*, *Clostridium tetani*, *Listeria monocytogenes*, *Fusobacterium nucleatum*, *Enterococcus faecalis*, *Acinetobacter baumannii*, *Burkholderia mallei*, and *Burkholderia cepacia*.
21. A composition comprising ethanolamine-utilizing lactic acid bacteria induced by ethanolamine during growth of a culture comprising said lactic acid bacteria.
22. The composition of claim 21, wherein said lactic acid bacteria are bacteria of the genus *Lactobacillus*.
23. The composition of claim 22, wherein said *Lactobacillus* are bacteria of the species *Lactobacillus reuteri*.
24. The composition of any one of claims 21-23, for use in the treatment of a condition or disorder caused by or related to an ethanolamine-utilizing pathogen.
25. A biologically pure culture of *Lactobacillus reuteri* DSM 27131.
26. A biologically pure culture of *Lactobacillus reuteri* DSM 32465.
27. A frozen or lyophilized composition comprising a biologically pure culture of lactic acid bacteria of any one of claims 25-26.
28. The *Lactobacillus reuteri* strains of any one of claims 25 to 26, or the composition of claim 27, for use in the treatment of a condition or disorder caused by or related to an ethanolamine-utilizing pathogen.
29. The *Lactobacillus reuteri* strains of any one of claims 25 to 26, or the composition of claim 27, for use in inhibiting the growth of one or more pathogenic bacteria in the gastrointestinal tract of an individual.

30. A method for the treatment of a condition or disorder caused by or related to an ethanolamine-utilizing pathogen in an individual, said method comprising administering to said individual an effective amount of a lactic acid bacteria or a composition of any one of claims 10, 16, 21 to 23, and/or 25 to 27, to said individual.
31. A method of selecting a lactic acid bacterial strain capable of utilizing ethanolamine comprising determining a genetic profile of said lactic acid bacteria, said method comprising the steps of:
- i) providing bacteria of a lactic acid bacterial strain to be screened;
 - 10 ii) performing an initial screening of said lactic acid bacterial strain, to determine the presence of one or more of the bacterial homologues of the genes encoding the following proteins:
 - 1. Ethanolamine ammonia lyase large subunit EutB;
 - 2. Microcompartment structural protein EutL; and/or
 - 15 3. Ethanolamine utilization protein EutH;in said lactic acid bacterial strain
 - iii) if one or more of said genes are present in said lactic acid bacterial strain, determining if said bacteria are capable of utilizing ethanolamine; and
 - 20 iv) selecting said lactic acid bacterial strain if said bacteria are capable of utilizing ethanolamine.
32. The method of claim 31, wherein said method in step ii) further comprises performing a screening to determine the presence of the bacterial homologue of the gene encoding NADPH-dependent FMN reductase belonging to the pfam03358 protein family and/or the gene encoding Protein-tyrosine-phosphatase belonging to the pfam13350 protein family.
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