CLAIMS:

1. A capsule comprising one or more strains of strict obligate anaerobic bacteria, wherein the capsule has a porous wall comprising surface pores with a molecular weight cut off between 50 and 200 kDa, wherein the porous wall comprises a complex formed from sodium cellulose sulphate and poly[dimethyldially-ammonium chloride].

2. The capsule of claim 1, wherein the one or more strains of strict obligate anaerobic bacteria encapsulated in the capsule have improved stability in the presence of oxygen relative to a corresponding one or more strains of the bacteria not encapsulated in the capsule.

3. The capsule of claim 1 or claim 2, which is freeze-dried.

4. The capsule of any one of claims 1-3, wherein at least one of the strains of strict obligate anaerobic bacteria is:
(i) a lactic acid-utilising bacteria (LUB) or a starch-utilising bacteria;
(ii) from a genus selected from *Megasphaera* and/or *Ruminococcus*; and/or
(iii) *Megasphaera elsdenii* or *Ruminococcus bromii* .

5. The capsule of any one of claims 1-4, wherein the capsule does not comprise bacteria from a genus selected from the group consisting of: *Bifidobacterium*, *Bacteroides*, *Fusobacterium*, *Propionibacterium*, *Enterococcus*, *Lactococcus*, *Peptostrepococcus*, *Pediococcus*, *Leuconostoc*, *Weissella*, *Geobacillus*, and *Lactobacillus.*

6. The capsule of any one of claims 1-5, wherein:
(i) the porous capsule contains at least 0.2×10^6 CFU of the strict obligate anaerobic bacteria;
(ii) the bacteria are suspended in the log phase of growth within the capsule;
(iii) the one or more strains of strict obligate anaerobic bacteria remain viable within the capsule for at least 30 days when stored under anaerobic conditions at ambient temperatures; and/or
(iv) the one or more strains of strict obligate anaerobic bacteria remain viable within the capsule for at least about 30 minutes when the capsule is exposed to an environment having >0.5% oxygen.

7. The capsule of claim 6, wherein:
(i) the porous capsule contains at least about 0.4×10^5 CFU of the strict obligate anaerobic bacteria one month after encapsulation following storage under anaerobic conditions at ambient temperature;

(ii) the porous capsule contains at least about 0.4 x 10^5 CFU of the strict obligate anaerobic bacteria three months after encapsulation following storage under anaerobic conditions at ambient temperature;
(iii) the porous capsule contains at least about 0.2 x 10^5 CFU of the strict obligate anaerobic bacteria eight months after encapsulation following storage under anaerobic conditions at ambient temperature.

8. The capsule of claim 7, wherein the capsule has been stored at an ambient temperature of up to about 35ºC.

9. A composition comprising one or more capsules of any one of claims 1-8.

10. The composition of claim 9, wherein:
(i) the composition comprises one or more carriers with low oxygen diffusion rate;
(ii) the composition is an animal feed additive;
(iii) the composition is in a dry form or a liquid form;
(iv) the composition is provided in a dosage form comprising at least about 1 x 10^6 CFU of the at least one strict obligate anaerobic bacteria; and/or
(v) the composition is packaged in a container under anaerobic conditions.

11. Use of the capsule of any one of claims 1-8, or the composition of claim 9 or 10, in the manufacture of a medicament for treating or preventing lactic acidosis or one or more conditions or clinical symptoms thereof in an animal.

12. The capsule of any one of claims 1-8, or the composition of claim 9 or 10, for use in increasing a population of strict obligate anaerobic bacteria in a gastrointestinal tract of an animal.

13. The capsule or composition for use of claim 12, wherein increasing the population of the strict obligate anaerobic bacteria in the gastrointestinal tract of the animal achieves one or more of the following in the animal:
(i) facilitates adaptation of the animal to a diet having a relatively higher amount of fermentable carbohydrates;
(ii) reduces accumulation of organic acid in the gastrointestinal tract of the animal;
(iii) improves starch utilisation in the gastrointestinal tract of the animal;
(iv) prevents or treats lactic acidosis, or one or more associated conditions or clinical symptoms thereof, in the animal;
(v) induces satiety in the animal;
(vi) controls or modulates food intake by the animal;

(vii) improves lactate utilization in the gastrointestinal tract of the animal;
(viii) improves one or more production traits selected from milk production, feedlot performance, growth rate, rate of gain, finishing time and feed conversion efficiency;
(ix) lowers the chance of digestive morbidity and/or mortality of the animal; and/or
(x) improves tolerance of an animal to a diet which is relatively higher in fermentable carbohydrates and/or lower in structural carbohydrates, without development of lactic acidosis.

14. The use of claim 11, or the capsule or composition for use of claim 13, wherein:
(i) the condition associated with lactic acidosis is selected from the group consisting of rumenitis, lactic acidosis induced laminitis, lactic acidosis induced bloat, polioencaphomelacia (PEM), colic, gastric ulcers, dehydration and liver abscesses; and/or
(ii) the one or more clinical symptoms of lactic acidosis are selected from reduced feed intake, reduced feed-conversion efficiency, weight loss, lameness, diarrhea, dehydration, reduced physical performance, slow recovery from exercise, crib-biting, wind-sucking and weaving behaviour.

15. The use of claim 11, or the capsule or composition for use of claim 13, wherein:
(i) the acidosis is acute acidosis or subacute acidosis; and/or
(ii) increasing the population of strict obligate anaerobic bacteria maintains a stable pH in the gastrointestinal tract of the animal.

16. The use of claim 11, or the capsule or composition for use of claim 12 or 13, wherein:
(i) the animal is a ruminant and increasing the population of strict obligate anaerobic bacteria in the gastrointestinal tract of the animal increases pH of the rumen and/or maintains pH of the rumen above about 5.5, optionally wherein the animal is a ruminant selected from the group consisting of sheep, cattle, goats, buffaloes, deer and camels; or
(ii) the animal is a hindgut fermenter and increasing the population of strict obligate anaerobic bacteria in the gastrointestinal tract of the animal increases pH of the hindgut or maintains pH of the hindgut above about 5.5, optionally wherein the hindgut fermenter is a horse.

17. The use of any one of claims 11-16, wherein the capsule or composition comprising same comprises at least about 1×10^6 CFU of the strict obligate anaerobic bacteria.

18. A method of improving the stability of one or more strict obligate anaerobic bacteria, said method comprising encapsulating the strict obligate anaerobic bacteria in a capsule having a porous wall comprising surface pores with a molecular weight cut off between 50 and 200 kDa, wherein the porous wall comprises a complex formed from sodium cellulose sulphate and poly[dimethyldially-ammonium chloride].

19. The method of claim 18, wherein:

(i) the capsule is a capsule of any one of claims 1-8 and the one or more strict obligate anaerobic bacteria is a strict obligate anaerobic bacteria comprised in the capsule of any one of claims 1-8;

(ii) the one or more strict obligate anaerobic bacteria remain viable within the capsule at least about 30 days post encapsulation, or at least about 2 months post encapsulation, or at least about 3 months post encapsulation, or at least about 4 months post encapsulation, or at least about 5 months post encapsulation, or at least about 6 months post encapsulation, or at least about 7 months post encapsulation, or at least about 8 months post encapsulation, when the capsule is stored under anaerobic conditions at ambient temperatures;

(iii) the one or more strict obligate anaerobic bacteria remain viable within the capsule for at least about 30 minutes, or at least about 1 hour, or at least about 90 minutes, or at least about 2 hours, or at least about 3 hours following exposure of the capsule to an environment having >0.5% oxygen; and/or

(iv) the one or more strains of strict obligate anaerobic bacteria remain viable within the capsule for at least about 30 minutes, or at least about 1 hour, or at least about 90 minutes, or at least about 2 hours, or at least about 3 hours, following rehydration.

20. A method of producing a capsule of any one of claims 1-8, the method comprising:

(i) culturing one or more strict obligate anaerobic bacteria in an anaerobic media;

(ii) encapsulating the bacteria in a capsule having a porous wall comprising surface pores with a molecular weight cut off between 50 and 200 kDa, wherein the porous wall comprises a complex formed from sodium cellulose sulphate and poly[dimethyldially-ammonium chloride]; and

(iii) performing one or more step which suspend growth of bacteria;

and optionally cultivating the encapsulated bacteria in an anaerobic media prior to performing step (iii).

21. The method of claim 20, wherein:

(i) the strict obligate anaerobic bacteria is a lactic acid utilising bacteria and the anaerobic media is a MRS media; or

the strict obligate anaerobic bacteria is a starch utilising bacteria and the anaerobic media is a maltose media, optionally containing rumen fluid; and/or

(ii) the one or more steps which suspend the growth of bacteria comprises any one of freeze-drying, spray-drying or extrusion.