CLAIMS

1. A method of improving levels of beneficial gut microbiota of an animal by ingesting a composition containing beta-casein or by providing to an animal a composition containing beta-casein, and wherein at least 75% by weight of the beta-casein is a beta-casein variant that has a proline at position 67 of the beta-casein amino acid sequence.

2. The method as claimed in claim 1, wherein the beta-casein variant is A2 beta-casein, A3 beta-casein, D beta-casein, E beta-casein or I beta-casein.

3. The method as claimed in claim 1 or claim 2, wherein the beta-casein variant is A2 beta-casein.

4. The method as claimed in any one of claims 1 to 3, wherein the beta-casein comprises at least 90% by weight A2 beta-casein.

5. The method as claimed in any one of claims 1 to 4, wherein the beta-casein comprises 100% A2 beta-casein.

6. The method as claimed in any one of claims 1 to 5, wherein improved gut microbiota is assessed by measuring the levels of one or more short-chain fatty acids in a faecal sample.

7. The method as claimed in claim 6, wherein the one or more short-chain fatty acids are selected from the group comprising acetic acid, propanoic acid and butanoic acid, or an ester thereof.

8. The method as claimed in any one of claims 1 to 7, wherein the composition is milk or a milk product.

9. The method as claimed in claim 8, wherein the milk is fresh milk, milk powder, liquid milk reconstituted from powder, skim milk, infant formula, homogenised milk, condensed milk, evaporated milk, pasteurised milk, or non-pasteurised milk.

10. The method as claimed in claim 8, wherein the milk product is cream, yoghurt, quark, cheese, butter, or ice cream.

11. The method as claimed in any one of claims 1 to 10, wherein the animal is a human.

12. A method of promoting the growth of bacteria in the gut of an animal comprising the ingestion by the animal of a composition containing beta-casein or by providing to the animal a composition containing beta-casein, and wherein at least 75% by weight of the beta-casein is a beta-casein variant that has a proline at position 67 of the beta-casein amino acid sequence.

13. The method as claimed in claim 12, wherein promoting the growth of bacteria in the gut avoids or reduces the risk of any one or more of the group comprising cancer, liver disease, systemic infections, inflammatory and autoimmune diseases, obesity and metabolic syndrome, and neurological disorders.