CLAIMS

WHAT IS CLAIMED IS:

1. An edible composition comprising a coagulated colloid, wherein the coagulated colloid comprises α casein protein and κ casein protein associated in a micellar form, wherein at least one of the α (alpha) casein protein and the κ (kappa) casein protein is recombinantly produced; and wherein the cheese composition does not contain β (beta) casein protein.

2. The edible composition of claim 1, wherein the recombinantly produced casein is produced from a bacterial host cell.

3. The edible composition of claim 2, wherein the bacterial host cell is selected from the group consisting of Lactococci sp., Lactococcus lactis, Bacillus subtilis, Bacillus amyloliquefaciens, Bacillus licheniformis and Bacillus megaterium, Brevibacillus choshinensis, Mycobacterium smegmatis, Rhodococcus erythropolis and Corynebacterium glutamicum, Lactobacilli sp., Lactobacillus fermentum, Lactobacillus casei, Lactobacillus acidophilus, Lactobacillus plantarum, Synechocystis sp. 6803 and E.coli.

4. The edible composition of any one of claims 1-3, wherein the α casein protein completely lacks or is substantially reduced in post-translational modification as compared to animal-derived α casein.

5. The edible composition of claim 4, wherein the α casein protein completely lacks or is substantially reduced in phosphorylation as compared to animal-derived α casein.

6. The edible composition of any one of claims 1-5, wherein the κ casein protein completely lacks or is substantially reduced in post-translational modification as compared to animal-derived κ casein.

7. The edible composition of claim 6, wherein the κ casein protein completely lacks or is substantially reduced in glycosylation, phosphorylation or both glycosylation and phosphorylation as compared to animal-derived κ casein.

8. The edible composition of any one of claims 1-7, wherein the ratio of α casein protein to κ casein protein is from 1:1 to 15:1.

9. The edible composition of any one of claims 1-8, wherein the ratio of α casein protein to κ casein protein is from 1:1 to 5:1.

10. The edible composition of any one of claims 1-9, wherein the α casein protein is αS1 or αS2.

11. The edible composition of any one of claims 1-10, wherein the α casein protein has an amino acid sequence comprising one of SEQ ID NO. 1-26 or a variant thereof with at least 80% sequence homology.

12. The edible composition of any one of claims 1-11, wherein the κ casein protein has an amino acid sequence comprising one of SEQ ID NO. 27-40 or a variant thereof with at least 80% sequence homology.

13. The edible composition of any one of claims 1-12, further comprising at least one salt selected from the group consisting of a calcium salt, a citrate salt and a phosphate salt.

14. The edible composition of any one of claims 1-13, wherein the coagulated colloid is comprised in a dairy-like product, a cheese, a curd, a renneted curd, or a yogurt.

15. The edible composition of any one of claims 1-14, wherein the edible composition is a cheese and wherein the cheese has one or more of (a) a fat content more than 0% to about 50%, (b) a fat derived from a plant-based source or (c) a sugar is derived from a plant-based source.

16. The edible composition of any one of claims 1-14, wherein:

a. the edible composition is a cheese and wherein the cheese is capable of melting and browning when heated;
b. the edible composition is a cheese selected from the group consisting of pasta-filata like cheese, paneer, cream cheese, cottage cheese, an aged cheese or a renneted cheese; or
c. the edible composition is a cheese and wherein the texture or hardness of the cheese is comparable to an animal-derived dairy cheese.

17. A method for producing an edible composition, comprising: combining a recombinant α casein protein, a recombinant κ casein protein and at least one salt under conditions, wherein the α casein protein and the κ casein protein form a micellar form in a liquid colloid, wherein the micellar form does not include β casein protein; and subjecting the liquid colloid to a first condition to form coagulates.

18. A liquid colloid comprising a micellar form, wherein the micellar form comprises a recombinant α casein protein, a recombinant κ casein protein and at least one salt, wherein the micellar form does not include β casein protein.

19. The liquid colloid of claim 18, wherein the α casein protein, the κ casein protein or a combination thereof completely lack or are substantially reduced in post-translational modifications.

20. The liquid colloid of claim 18, wherein (a) the α casein protein completely lacks or is substantially reduced in phosphorylation as compared to an animal-derived α casein, (b) the κ casein protein completely lacks or is substantially reduced in glycosylation as compared to an animal-derived κ casein, (c) the κ casein protein completely lacks or is substantially reduced in phosphorylation as compared to an animal-derived κ casein or (d) any of (a), (b) and (c).

21. A yogurt composition formed from the liquid colloid of claim 18.