

Moreover, in accordance with this invention, such human milk proteins could be specially produce, such as human lysozyme and human lactotransferrin so that, in effect, tailor-made recombinant human milk protein compositions containing only, for example, human lysozyme or only human lactoperoxidase or human lactoferrin or human secretory IgA and others, or combinations thereof, could be produced in high purity. The production of human milk proteins by recombinant DNA techniques permits greater flexibility in the make-up and utilization of compositions in accordance with this invention when utilized to enhance the diet of infants, particularly VLBW infants or to enhance the nutritional and/or functional value of synthetic infant formulas, either cow milk-based, soy protein-based or meat-based, as indicated hereinabove. Instead of recombinant human milk proteins, one could employ in the practices of this invention human milk proteins produced by chemical synthesis where applicable or desired. Such chemically synthesized human milk proteins, like the corresponding recombinant proteins, would also be free of HIV and accordingly would also be usefully employed in the practices of this invention.

As will be apparent to those skilled in the art in the light of the foregoing disclosures, many modifications, alterations and substitutions are possible in the practices of this invention without departing from the spirit or scope thereof.

What is claimed is:

1. A concentrate of one or more synthetic or recombinant nutritional, functional or protective human milk proteins or host resistance factors of human milk suitable, after dilution in a liquid, for infant consumption, such that, when so diluted, said human milk proteins or said host resistance factors can be administered to or fed directly to an infant for consumption.

2. The concentrate of claim 1 wherein said human milk proteins or host resistance factors comprise secretory immunoglobulin-A, lactoferrin, lactoperoxidase, lysozyme, alpha-lactalbumin, alpha-casein, beta-casein, or kappa-casein.

3. A method of improving the nutritional, functional or protective value of a synthetic infant formula which comprises adding to said formula a composition including one or more synthetic or recombinant nutritional, functional or protective human milk proteins or host resistance factors of human milk.

4. The method in accordance with claim 3 wherein the amount of said composition added to said synthetic infant formula is sufficient such that when the infant formula is administered to an infant for consumption, the added synthetic or recombinant nutritional, functional or protective human milk proteins or host resistance factors in said synthetic infant formula are at a concentration substantially the same as the concentration of human milk proteins or host resistance factors found in human milk.

5. The method of claim 4 wherein the nutritional, functional and protective value of said synthetic infant formula is improved by adding to said synthetic infant formula an effective amount of recombinant human lactoferrin.

6. The method of claim 5 wherein the nutritional and protective value of said synthetic infant formula is further improved by adding to said synthetic infant formula an effective amount of recombinant human lysozyme.

7. The method of claim 6 wherein the nutritional and protective value of said synthetic infant formula is further improved by adding to said synthetic infant formula an effective amount of recombinant human lactoperoxidase.

8. The method of claim 7 wherein the nutritional and protective value of said synthetic infant formula is further improved by adding to said synthetic infant formula an effective amount of recombinant human immunoglobulin-A.

9. The method of claim 8 wherein the nutritional value of said synthetic infant formula is further improved by adding to said synthetic infant formula an effective amount of recombinant human alpha-lactalbumin.

10. The method of claim 9 wherein the nutritional value of said synthetic infant formula is further improved by adding to said synthetic infant formula an effective amount of recombinant human casein.

11. The method in accordance with claim 3 wherein the amount of said composition added to said synthetic infant formula is sufficient such that when the infant formula is administered to an infant for consumption, the added nutritional, functional or protective human milk proteins or host resistance factors in said synthetic infant formula are at a concentration ranging from about 2 to about 1000 times the concentration of human milk proteins or host resistance factors found in human milk.

12. The method of claim 11 wherein the nutritional, functional and protective value of said synthetic infant formula an effective amount of recombinant human lactoferrin.

13. The method of claim 11 wherein the nutritional and protective value of said synthetic infant formula is improved by adding to said synthetic infant formula an effective amount of recombinant human lysozyme.

14. The method of claim 11 wherein the nutritional and protective value of said synthetic infant formula is improved by adding to said synthetic infant formula an effective amount of recombinant human lactoperoxidase.

15. The method of claim 11, wherein the nutritional and protective value of said synthetic infant formula is improved by adding to said synthetic infant formula an effective amount of recombinant human immunoglobulin-A.

16. The method of claim 11 wherein the nutritional value of said synthetic infant formula is improved by adding to said synthetic infant formula an effective amount of recombinant human alpha-lactalbumin.

17. The method of claim 11 wherein the nutritional value of said synthetic infant formula is further improved by adding to said synthetic infant formula an effective amount of recombinant human casein.

18. The method of claim 17 wherein said recombinant human casein is alpha-casein.

19. The method of claim 17 wherein said recombinant human casein is beta-casein.

20. The method of claim 17 wherein said recombinant human casein is kappa-casein.

21. A method in accordance with claim 3 wherein the amount of said composition added to said infant formula is in an amount sufficient to provide a concentration of the human milk proteins or host resistance factors in said synthetic formula to about the concentration of human milk proteins or said host resistance factors as found in human milk when said synthetic infant formula is administered to an infant for consumption.

22. The method in accordance with claim 3 wherein said human milk proteins or host resistance factors comprise secretory immunoglobulin-A, lactoferrin, lactoperoxidase, lysozyme, alpha-lactalbumin, alpha-casein, beta-casein, or kappa-casein.