

CLAIMS

What is claimed is:

1. An aqueous lipid emulsion comprising:
at least 33% of lipids, lipid soluble nutrients, or a combination thereof, based upon the total weight of the emulsion,
wherein the lipid emulsion is essentially free of carbohydrate and protein, and
wherein the lipid emulsion is shelf-stable for at least 7 months.
2. The lipid emulsion of claim 1, wherein the lipid emulsion is shelf-stable for at least 12 months
3. The lipid emulsion of claims 1 or 2, wherein the lipid emulsion has a mean particle size of from 0.2 to 0.9 μm at the time of manufacturing.
4. The lipid emulsion of any of claims 1-3, wherein the mean particle size of the lipid emulsion at 7 months is substantially the same as the mean particle size of the lipid emulsion at the time of manufacturing.
5. The lipid emulsion of any of claims 1-4, wherein the mean particle size of the lipid emulsion at 7 months differs from the mean particle size of the lipid emulsion at the time of manufacturing by less than 10%.
6. The lipid emulsion of any of claims 1-5, wherein the lipid emulsion has a mean particle size of from 0.2 to 0.9 μm at the time of manufacturing, and a mean particle size of from 0.2 to 0.9 μm at 7 months.
7. The lipid emulsion of any of claims 1-6, wherein the lipid emulsion has a mean particle size of from 0.32 to 0.39 μm at the time of manufacturing, and a mean particle size of from 0.32 to 0.39 μm at 7 months.

8. The lipid emulsion of any of claims 1-7, wherein the zeta potential of the lipid emulsion at 7 months is substantially the same as the zeta potential of the lipid emulsion at the time of manufacturing.
9. The lipid emulsion of any of claims 1-8, wherein the zeta potential of the lipid emulsion at 7 months differs from the zeta potential of the lipid emulsion at the time of manufacturing by less than ± 15 mV.
10. The lipid emulsion of any of claims 1-9, wherein the lipid emulsion has a pH of from 6 to 7.2.
11. The lipid emulsion of any of claims 1-10, wherein the lipids comprise at least one emulsifier.
12. The lipid emulsion of claim 11, wherein the at least one emulsifier comprises citric acid esters of mono- and di- glycerides.
13. The lipid emulsion of claims 11 or 12, wherein the lipid emulsion comprises from 0.1 to 7 % of at least one emulsifier, based upon the total weight of the emulsion.
14. The lipid emulsion of any of claims 11-13, wherein the lipid emulsion comprises from 0.1 to 7 % of an emulsifier consisting of citric acid esters of mono- and di- glycerides, based upon the total weight of the emulsion.
15. The lipid emulsion of any of claims 1-14, wherein the lipid emulsion comprises at least 40% of lipids, lipid soluble nutrients, or a combination thereof, based upon the total weight of the emulsion.
16. The lipid emulsion of any of claims 1-15, wherein the lipid emulsion comprises from 35 to 45% of lipids, lipid soluble nutrients, or a combination thereof, and from 55 to 65% water, based upon the total weight of the emulsion.

17. The lipid emulsion of any of claims 1-16, wherein the lipids comprise at least one of coconut oil, fractionated coconut oil, soy oil, high oleic soy oil, corn oil, olive oil, safflower oil, high oleic safflower oil, medium chain triglyceride oil (MCT oil), high gamma linolenic (GLA) safflower oil, sunflower oil, high oleic sunflower oil, palm oil, palm kernel oil, palm olein, canola oil, high oleic canola oil, marine oils, fish oils, algal oils, borage oil, cottonseed oil, fungal oils, microbial derived oils, rice bran oil, wheat bran oil, interesterified oils, transesterified oils, structured lipids, and combinations thereof.
18. The lipid emulsion of any of claims 1-17, wherein the lipids include at least one oil comprising long chain polyunsaturated fatty acids.
19. The lipid emulsion of claim 18, wherein the long chain polyunsaturated fatty acids comprise alpha-linolenic acid (ALA), arachidonic acid (ARA), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), gamma linolenic acid (GLA), and combinations thereof.
20. The lipid emulsion of any of claims 1-19, wherein the lipid soluble nutrients comprise carotenoids, lipid-soluble vitamins, and combinations thereof.
21. The lipid emulsion of claim 20, wherein the carotenoids comprise lutein, zeaxanthin, astaxanthin, alpha- or beta-cryptoxanthin, beta-carotene, lycopene, and combinations thereof.
22. The lipid emulsion of claim 20, wherein the lipid-soluble vitamins comprise synthetic or natural forms of vitamins A, E, D, K, and combinations thereof.
23. The lipid emulsion of any of claims 1-22, wherein the lipid emulsion is an enteral liquid nutritional.
24. The lipid emulsion of any of claims 1-23, wherein the lipid emulsion is a preterm infant liquid nutritional.