Claims

1. A composition for topical administration to an external body surface comprising:

a polyhydroxy acid and a zinc salt of its conjugate base, wherein the polyhydroxy acid is selected from lactobionic acid, gluconolactone (gluconic acid), a combination of lactobionic acid and gluconolactone (gluconic acid),

a partition coefficient enhancer selected from propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, propylene carbonate, dipropylene glycol, a glycol ether, diethylene glycol monoethyl ether, a pyrrolidone, N-methyl pyrrolidone and a combination thereof wherein the partition coefficient enhancer is at 15 – 30% w/w of the composition,

a diffusion coefficient enhancer which is selected from a C12 to C14 straight chain fatty acid or a C14 straight chain primary alcohol wherein the diffusion coefficient enhancer is at 1.0 – 2.0% w/w of the composition,

and wherein the composition has a pH in the range of 2.7 to 5.0.

2. The composition according to claim 1, wherein the partition coefficient enhancer is 15 – 25 % w/w of the composition.

3. The composition according to claim 1 or 2, wherein the partition coefficient enhancer is propylene glycol.

4. The composition according to any of claims 1 to 3, wherein the diffusion coefficient enhancer is 1.2 – 1.8 % w/w of the composition.

5. The composition according to any of claims 1 to 4, wherein the diffusion coefficient enhancer is 1-tetradecanol.

6. The composition according to any of claims 1 to 5, wherein the polyhydroxy acid and the zinc salt of its conjugate base is 2.0 – 10.0 % w/w of the composition.

7. The composition according to any of claims 1 to 6, wherein the polyhydroxy acid and the zinc salt of its conjugate base is greater than or equal to 2.5 % w/w of the composition, or wherein the polyhydroxy acid and the zinc salt of its conjugate base is less than or equal to 9.5 % w/w of the composition.

8. The composition according to any of claims 1 to 7, wherein the polyhydroxy acid is from 3.0 to 6.5 % w/w of the composition.

9. The composition according to any of claims 1 to 8, wherein the polyhydroxy acid is lactobionic acid.

10. The composition of any of claims 1 to 9, wherein the zinc salt used in the composition is formed from zinc oxide (ZnO).

11. The composition of any of claims 1 to 10, wherein the composition comprises from 10.0 – 30.0 % w/w of an emollient.

12. The composition of any of claims 1 to 11, wherein the emollient is a high molecular weight hydrocarbon.

13. The composition of claim 12, wherein the high molecular weight hydrocarbon is selected from the group consisting of: mineral oil, petrolatum, paraffin, and mixtures thereof.

14. The composition of any of claims 11 to 13, wherein the emollient is selected from hydrogenated polydecene, hydrogenated didecene, hydrogenated polyisobutene and mixtures thereof, optionally the emollient is hydrogenated polydecene.

15. The composition of any of claims 1 to 13, wherein the pH of the composition is in the range of 3.0 to 4.5

16. The composition of any of claims 1 to 14, wherein the composition comprises a further acid to modulate the pH of the composition.

17. The composition of claim 16, wherein the further acid is citric acid.

18. The composition of any of claims 1 to 17, wherein the composition comprises 3.0 – 12.0 % w/w of surfactant.

19. The composition of claim 18, wherein the surfactant is a surfactant system comprising Glucate SS Emulsifier (methyl glucose sesquistearate) and Glucamate SSE-20 Emulsifier (PEG-20 methyl glucose sesquistearate).

20. The composition of claim 19, wherein the surfactant system further comprises glyceryl stearate.

21. The composition of any of claims 1 to 20, further comprising a ceramide.

22. The composition of claim 21, further comprising a cholesterol and at least one fatty acid.

23. The composition of claim 22, wherein the ceramide, the cholesterol, and the at least one fatty acid is approximately in a 3:1:1 ratio.

24. The composition of claim 23, wherein the composition comprises ceramide, cholesterol and linoleic acid in approximately a 3:1:1 ratio.

25. The composition of any of the preceding claims further comprising one or more of a stabilizer, a preservative or a salt.

26. A composition according to any of the preceding claims, further comprising one or more pharmaceutically acceptable excipient, carrier, diluent or vehicle.

27. A composition for topical administration to an external body surface comprising

an aqueous-glycol phase comprising:

4.0 – 6.0 % w/w of a polyhydroxy acid and a zinc salt of its conjugate base, wherein the polyhydroxy acid is selected from lactobionic acid, gluconolactone (gluconic acid), a combination of lactobionic acid and gluconolactone (gluconic acid),

18.0 – 22.0 % w/w of a partition coefficient enhancer selected from propylene glycol, butylene glycol, pentylene glycol, hexylene glycol, propylene carbonate, dipropylene glycol, hexylene glycol, a glycol ether, diethylene glycol monoethyl ether, a pyrrolidone, N-methyl pyrrolidone and a combination thereof, and

water,

and an oil phase comprising:

1.0 – 2.0 % w/w of a diffusion coefficient enhancer which is a C12 to C14 straight chain fatty acid or a C14 straight chain primary alcohol,

emollient, and

surfactant,

wherein % w/w is of the composition, and wherein the composition has a pH in the range of 3.0 to 3.5.

28. The composition according to claim 27, wherein the polyhydroxy acid and a zinc salt of its conjugate base is lactobionic acid and zinc lactobionate.

29. The composition according to claim 27, wherein the partition coefficient enhancer is propylene glycol.

30. The composition according to claim 27, wherein the diffusion coefficient enhancer is 1-tetradecanol.

31. A composition according to any of claims 1 to 30, for use in therapy.

32. Use of a composition according to any of claims 1 to 30 for improving the appearance of skin and/or for preventing aging of skin.

33. A method of improving the appearance of skin and/or for preventing aging of skin, the method comprising topical application of a composition according to any of claims 1 to 30 to skin of a subject in need thereof.