CLAIMS

1. A pharmaceutical composition comprising an oil-in-water emulsion of an exosome, such as a mesenchymal stem cell (MSC) exosome, for the treatment or prevention of a dermatological disease or condition.

2. A pharmaceutical composition according to any preceding claim, in which the dermatological disease or condition comprises atopic dermatitis, psoriasis or eczema.

3. A pharmaceutical composition according to any preceding claim, which is capable of reducing or alleviating one or more of erythema, scaling and thickness in the individual as compared to an individual to which the pharmaceutical composition is not applied.

4. A pharmaceutical composition according to any preceding claim, which is capable of reducing the level of an inflammatory cytokine such as TNFα, IL-17, IL-23 and Membrane Attack Complex C5b-9 as compared to an individual to which the pharmaceutical composition is not applied.

5. A pharmaceutical composition according to any preceding claim, in which the pharmaceutical composition comprises a lotion or is to be topically applied to a skin of an individual in need of treatment.

6. A pharmaceutical composition according to any preceding claim, in which the pharmaceutical composition is to be administered 2 to 3 times daily.

7. A pharmaceutical composition according to any preceding claim, in which the pharmaceutical composition alleviates immune reactivity triggered by exposure of the skin of an individual to an irritant such as Imiquimod (IMQ).

8. A pharmaceutical composition according to any preceding claim, further comprising a liposome comprising a lecithin.

9. A pharmaceutical composition according to Claim 8, in which the lecithin comprises egg-yolk lecithin or in which the liposome comprising a lecithin comprises a yolk lecithin liposome (YLL).

10. Use of an oil-in-water emulsion of an exosome, such as a mesenchymal stem cell (MSC) exosome, in the preparation of a medicament for the treatment or prevention of a dermatological disease or condition.

11. Use according to Claim 10, which comprises a feature set out in any of Claims 2 to 9.

12. A method of preparing a pharmaceutical composition for the treatment or prevention of a dermatological condition, the method comprising:

(a) providing an exosome such as an mesenchymal stem cell exosome (MSC); and

(b) homogenising the exosome with an emulsifying agent to form an oil in water emulsion of the exosome.

13. A method according to Claim 12, in which the mesenchymal stem cell exosome (MSC) is provided in (a) as a dispersion in an oil, preferably a plant oil such as olive oil.

14. A method according to Claim 12 or 13, in which the preparation comprises a period of storage of the MSC dispersion prior to the homogenising step (b).

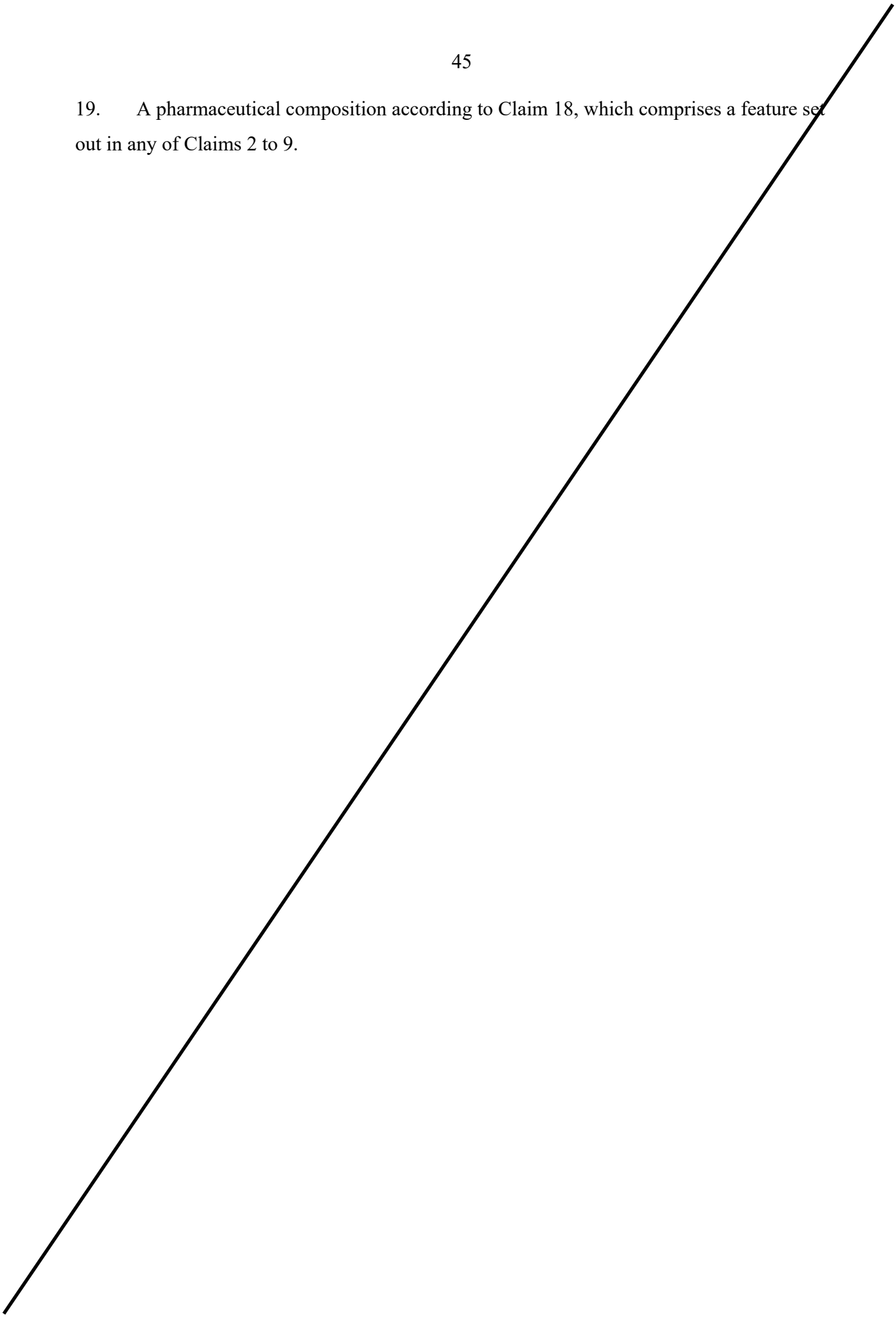
15. A method according to Claim 12, 13 or 14, in which the emulsifying agent is selected from the group consisting of: a natural emulsifying agent, agar, tragacanth, alginates, gum, pectins, acacia, starch, gelatin, albumin, lecithin, cholesterol), a semi-synthetic emulsifying agent, methylcellulose derivatives such as carboxymethylcellulose, starch derivatives such as octenyl succinate anhydride treated starch also known as OSA-starch, a synthetic emulsifying agent, benzalkonium chloride, benzethonium chloride, sodium oleate potassium oleate, triethanolamine stearate, detergents such as sodium lauryl sulfate, sodium dioctyl sulfosuccinate, sodium docusate), sorbitan esters (Spans) and polyoxyethylene derivatives of sorbitan esters (Tweens) and glyceryl esters.

16. A method according to any of Claims 12 to 15, in which the emulsifying agent comprises polyacrylate-13, polyisobutene and polysorbate 20, such as 2% (w/v) SEPIPLUS™ 400 in water.

17. A method according to any of Claims 12 to 16, further comprising a step of adding a liposome comprising a lecithin, preferably in which the lecithin comprises egg-yolk lecithin or in which the liposome comprising a lecithin comprises a yolk lecithin liposome (YLL), to the pharmaceutical composition.

18. A pharmaceutical composition prepared by a method according to any of Claims 12 to 17.

19. A pharmaceutical composition according to Claim 18, which comprises a feature set out in any of Claims 2 to 9.



CLAIMS

1. A pharmaceutical composition comprising an oil-in-water emulsion of a mesenchymal stem cell (MSC) exosome, together with a liposome comprising egg-yolk lecithin, such as a yolk lecithin liposome (YLL), for the treatment or prevention of a dermatological disease or condition comprising atopic dermatitis, psoriasis or eczema.

2. A pharmaceutical composition according to Claim 1, which is capable of reducing or alleviating one or more of erythema, scaling and thickness in the individual as compared to an individual to which the pharmaceutical composition is not applied.

3. A pharmaceutical composition according to Claim 1 or 2, which is capable of reducing the level of an inflammatory cytokine such as TNFα, IL-17, IL-23 and Membrane Attack Complex C5b-9 as compared to an individual to which the pharmaceutical composition is not applied.

4. A pharmaceutical composition according to Claim 1, 2 or 3, in which the pharmaceutical composition comprises a lotion or is to be topically applied to a skin of an individual in need of treatment.

5. A pharmaceutical composition according to any preceding claim, in which the pharmaceutical composition is to be administered 2 to 3 times daily.

6. A pharmaceutical composition according to any preceding claim, in which the pharmaceutical composition alleviates immune reactivity triggered by exposure of the skin of an individual to an irritant such as Imiquimod (IMQ).

7. Use of combination of an oil-in-water emulsion of a mesenchymal stem cell (MSC) exosome and a liposome comprising egg-yolk lecithin, such as a yolk lecithin liposome (YLL), in the preparation of a medicament for the treatment or prevention of a dermatological disease or condition comprising atopic dermatitis, psoriasis or eczema.

8. Use according to Claim 7, which comprises a feature set out in any of Claims 2 to 6.

9. A method of preparing a pharmaceutical composition for the treatment or prevention of a dermatological disease or condition comprising atopic dermatitis, psoriasis or eczema, the method comprising:

(a) providing a mesenchymal stem cell (MSC) exosome;

(b) homogenising the exosome with an emulsifying agent to form an oil in water emulsion of the mesenchymal stem cell (MSC) exosome; and

(c) combining the oil-in-water emulsion of the mesenchymal stem cell (MSC) exosome with a liposome comprising egg-yolk lecithin, such as a yolk lecithin liposome (YLL).

10. A method according to Claim 9, in which the mesenchymal stem cell (MSC) exosome is provided in (a) as a dispersion in an oil, preferably a plant oil such as olive oil.

11. A method according to Claim 10, in which the preparation comprises a period of storage of the MSC dispersion of from 1 day to 40 days or more prior to the homogenising step (b).

12. A method according to Claim 9, 10 or 11, in which the emulsifying agent is selected from the group consisting of: a natural emulsifying agent, agar, tragacanth, alginates, gum, pectins, acacia, starch, gelatin, albumin, lecithin, cholesterol), a semi-synthetic emulsifying agent, methylcellulose derivatives such as carboxymethylcellulose, starch derivatives such as octenyl succinate anhydride treated starch also known as OSA-starch, a synthetic emulsifying agent, benzalkonium chloride, benzethonium chloride, sodium oleate potassium oleate, triethanolamine stearate, detergents such as sodium lauryl sulfate, sodium dioctyl sulfosuccinate, sodium docusate, sorbitan esters (Spans) and polyoxyethylene derivatives of sorbitan esters (Tweens) and glyceryl esters.

13. A method according to any of Claims 9 to 12, in which the emulsifying agent comprises polyacrylate-13, polyisobutene and polysorbate 20, such as 2% (w/v) SEPIPLUS™ 400 in water.

14. A method according to any of Claims 9 to 13, further comprising a step of adding a liposome comprising a lecithin, preferably in which the lecithin comprises egg-yolk lecithin or

in which the liposome comprising a lecithin comprises a yolk lecithin liposome (YLL), to the pharmaceutical composition.

15. A pharmaceutical composition prepared by a method according to any of Claims 9 to 14.

16. A pharmaceutical composition according to Claim 15, which comprises a feature set out in any of Claims 2 to 6.