Claims

1. A nanoemulsion ophthalmic composition, comprising: cyclosporine; castor oil; polyoxyethylene castor oil; at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol; menthol; and an aqueous solvent.

2. A nanoemulsion ophthalmic composition, comprising:

cyclosporine in an amount of 0.03 w/v% to 0.5 w/v%;

castor oil in an amount of 0.2 w/v% or more and less than eight times the content of cyclosporine;

a hydrophilic emulsifier including polyoxyethylene castor oil in an amount of 1 w/v% to 5 w/v%;

at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol in an amount of 0.1 w/v% to 5 w/v%;

menthol in an amount of 0.001 w/v% or more and less than 0.1 w/v%; and

an aqueous solvent.

3. The nanoemulsion ophthalmic composition of claim 2, wherein the cyclosporine is comprised in an amount of 0.07 w/v% to 0.2 w/v%.

4. The nanoemulsion ophthalmic composition of claim 3, wherein the

~~eater~~ castor oil is comprised in an amount of 0.25 w/v% or more and less than five times the content of cyclosporine.

5. The nanoemulsion ophthalmic composition of claim 3, wherein the polyoxyethylene castor oil is comprised in an amount of 1.5 w/v% to 5 w/v%.

6. The nanoemulsion ophthalmic composition of claim 4, wherein the polyoxyethylene castor oil is comprised in an amount of 1.5 w/v% to 5 w/v%.

7. The nanoemulsion ophthalmic composition of claim 1, the nanoemulsion ophthalmic composition, comprising:

cyclosporine in an amount of 0.08 w/v% to 0.1 w/v%;

castor oil in an amount of 0.25 w/v% or more and 4.7 times or less the content of cyclosporine;

polyoxyl 35 castor oil in an amount of 1.6 w/v% to 5 w/v%;

at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol in an amount of 0.5 w/v% to 5 w/v%;

menthol in an amount of 0.001 w/v% to 0.01 w/v%; and

an aqueous solvent.

~~7~~8. The nanoemulsion ophthalmic composition of any one of claims 1 to ~~6~~7, wherein an average particle size is 1 nm to 100 nm.

~~8~~9. The nanoemulsion ophthalmic composition of any one of claims 1 to ~~6~~7, further comprising at least one stabilizer selected from carboxymethyl cellulose (CMC), hydroxypropyl methylcellulose (HPMC), hydroxyethyl cellulose (HEC), polyvinyl alcohol (PVA), polyvinyl pyrrolidone (PVP), carbomer, gellan gum, xanthan gum, hyaluronic acid (HA), sodium hyaluronate, sodium alginate, and dextran.

~~9~~10. The nanoemulsion ophthalmic composition of claim ~~8~~9, wherein the stabilizer is comprised in an amount of 0.001 w/v% to 10.0 w/v%.

~~10~~11. A method for preparing a nanoemulsion ophthalmic composition, the method comprising preparing a mixed composition by stirring and mixing:

cyclosporine in an amount of 0.03 w/v% to 0.5 w/v%;

castor oil in an amount of 0.2 w/v% or more and less than eight times the content of cyclosporine;

a hydrophilic emulsifier including polyoxyethylene castor oil in an amount of 1 w/v% to 5 w/v%;

at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol in an amount of 0.1 w/v% to 5 w/v%;

menthol in an amount of 0.001 w/v% or more and less than 0.1 w/v%; and

an aqueous solvent.

~~11~~12. The method of claim ~~10~~11, wherein the cyclosporine is comprised in an amount of 0.07 w/v% to 0.2 w/v%.

~~12~~13. The method of claim ~~11~~12, wherein the castor~~ter~~ oil is comprised in an amount of 0.25 w/v% or more and less than five times the content of cyclosporine.

~~13~~14. The method of claim ~~11~~12, wherein the polyoxyethylene castor oil is comprised in an amount of 1.5 w/v% to 5 w/v%.

~~14~~15. The method of claim ~~12~~13, wherein the polyoxyethylene castor oil is comprised in an amount of 1.5 w/v% to 5 w/v%.

~~15~~16. The method of any one of claims ~~10~~ 11 to ~~14~~15, wherein an average particle size of the nanoemulsion ophthalmic composition is 1 nm to 100 nm.

~~16~~17. The method of any one of claims ~~10~~ 11 to ~~14~~15, further comprising mixing a stabilizer in the mixed composition.

~~17~~18. The method of claim ~~16~~17, wherein the stabilizer is comprised in an amount of 0.001 w/v% to 10.0 w/v%.

~~18. A nanoemulsion ophthalmic composition, which is prepared by mixing:~~

~~cyclosporine in an amount of 0.03 w/v% to 0.5 w/v%;~~

~~castor oil in an amount of 0.2 w/v% or more and less than eight times the content of cyclosporine;~~

~~a hydrophilic emulsifier comprising polyoxyethylene castor oil in an amount of 1 w/v% to 5 w/v%;~~

~~at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol in an amount of 0.1 w/v% to 5 w/v%;~~

~~menthol in an amount of 0.001 w/v% or more and less than 0.1 w/v%; and~~

~~an aqueous solvent.~~

~~19. The nanoemulsion ophthalmic composition of claim 18, wherein the cyclosporine is comprised in an amount of 0.07 w/v% to 0.2 w/v%.~~

~~20. The nanoemulsion ophthalmic composition of claim 19, wherein the cater oil is comprised in an amount of 0.25 w/v% or more and less than five times the content of cyclosporine.~~

~~21. The nanoemulsion ophthalmic composition of claim 19, wherein the polyoxyethylene castor oil is comprised in an amount of 1.5 w/v% to 5 w/v%.~~

~~22. The nanoemulsion ophthalmic composition of claim 20, wherein the polyoxyethylene castor oil is comprised in an amount of 1.5 w/v% to 5 w/v%.~~

~~23. The nanoemulsion ophthalmic composition of any one of claims 18 to 22, wherein an average particle size of the nanoemulsion ophthalmic composition is 1 nm to 100 nm.~~

~~24. The nanoemulsion ophthalmic composition of any one of claims 18 to 22, wherein the nanoemulsion ophthalmic composition is prepared by further mixing a stabilizer therein.~~

~~25. The nanoemulsion ophthalmic composition of claim 24, wherein the stabilizer is mixed in an amount of 0.001 w/v% to 10.0 w/v%.~~

~~26. A method for preventing or treating dry eye syndrome, the method comprising administering to a subject a nanoemulsion ophthalmic composition comprising:~~

~~cyclosporine in an amount of 0.03 w/v% to 0.5 w/v%;~~

~~castor oil in an amount of 0.2 w/v% or more and less than eight times the content of cyclosporine;~~

~~a hydrophilic emulsifier including polyoxyethylene castor oil in an amount of 1 w/v% to 5 w/v%;~~

~~at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol in an amount of 0.1 w/v% to 5 w/v%;~~

~~menthol in an amount of 0.001 w/v% or more and less than 0.1 w/v%; and~~

~~an aqueous solvent.~~

~~27~~19. A use of a nanoemulsion ophthalmic composition comprising:

cyclosporine in an amount of 0.03 w/v% to 0.5 w/v%;

castor oil in an amount of 0.2 w/v% or more and less than eight times the content of cyclosporine;

a hydrophilic emulsifier including polyoxyethylene castor oil in an amount of 1 w/v% to 5 w/v%;

at least one hydrophobic emulsifier selected from the group consisting of polyethylene glycol and propylene glycol in an amount of 0.1 w/v% to 5 w/v%;

menthol in an amount of 0.001 w/v% or more and less than 0.1 w/v%; and

an aqueous solvent

for preparing a medication for preventing or treating dry eye syndrome.