CLAIMS

1. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid in a content of greater than 30 wt.%, greater than 32 wt.%, or greater than 34 wt.% and ~~comprising substantially no arachidonic acid, or~~ comprising arachidonic acid in a content of ~~0.3 wt.% or less, 0.2 wt.% or less, 0.1 wt.% or less, 0.05 wt.% or less, 0.04 wt.% or less, 0.03 wt.% or less, or~~ 0.01 wt.% or less.

2. The microbial oil/lipid according to claim 1, wherein in the constituent fatty acids of the oil/lipid, a content of C24:0 is 8.5 wt.% or less, 7.0 wt.% or less, 6.0 wt.% or less, or 5.5 wt.% or less.

3. The microbial oil/lipid according to claim 1 or 2, wherein in the constituent fatty acids of the oil/lipid, a total content of C24:0 and C22:0 is 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, 8.0 wt.% or less, or 7.5 wt.% or less.

4. The microbial oil/lipid according to any one of claims 1 to 3, wherein in the constituent fatty acids of the oil/lipid, a content of C24:0, C22:0, and C20:0 is 12.0 wt.% or less, 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, or 8.0 wt.% or less.

5. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid in a content of more than 30 wt.%, more than 32 wt.%, or more than 34 wt.%, and comprising arachidonic acid in a content of 0.01 wt.% or less, wherein a content of C24:0 is 8.5 wt.% or less, 7.0 wt.% or less, 6.0 wt.% or less, or 5.5 wt.% or less.

6. The microbial oil/lipid according to claim 5, wherein in the constituent fatty acids of the oil/lipid, a total content of C24:0 and C22:0 is 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, 8.0 wt.% or less, or 7.5 wt.% or less.

7. The microbial oil/lipid according to claim 5 or 6, wherein in the constituent fatty acids of the oil/lipid, a content of C24:0, C22:0, and C20:0 is 12.0 wt.% or less, 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, or 8.0 wt.% or less.

8. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid in a content of more than 30 wt.%, more than 32 wt.%, or more than 34 wt.%, and comprising arachidonic acid in a content of 0.01 wt.% or less, wherein a total content of C24:0 and C22:0 is 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, 8.0 wt.% or less, or 7.5 wt.% or less.

9. The microbial oil/lipid according to claim 8, wherein in the constituent fatty acids of the oil/lipid, a content of C24:0, the C22:0, and C20:0 is 12.0 wt.% or less, 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, or 8.0 wt.% or less.

10. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid in a content of greater than 30 wt.%, greater than 32 wt.%, or greater than 34 wt.%, wherein a content of C24:0, C22:0, and C20:0 is 12.0 wt.% or less, 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, or 8.0 wt.% or less.

11. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid, and comprising arachidonic acid in a content of 0.01 wt.% or less, wherein a compositional ratio of arachidonic acid to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/120 or less, 1/180 or less, 1/360 or less, 1/1000 or less, 1/2350 or less, or 1/3000 or less in terms of weight ratio, .

12. The microbial oil/lipid according to claim 11, wherein a compositional ratio of C24:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/4.1 or less, 1/5.0 or less, or 1/6.0 or less in terms of weight ratio.

13. The microbial oil/lipid according to claim 11 or 12, wherein a compositional ratio of a total of C24:0 and C22:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.1 or less, 1/4.0 or less, or 1/5.0 or less in terms of weight ratio.

14. The microbial oil/lipid according to any one of claims 11 to 13, wherein a compositional ratio of a total of C24:0, C22:0, and C20:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.0 or less, 1/3.9 or less, or 1/4.8 or less in terms of weight ratio.

15. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid, and comprising arachidonic acid in a content of 0.01 wt.% or less, wherein a compositional ratio of C24:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/4.1 or less, 1/5.0 or less, or 1/6.0 or less in terms of weight ratio.

16. The microbial oil/lipid according to claim 15, wherein a compositional ratio of a total of C24:0 and C22:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.1 or less, 1/4.0 or less, or 1/5.0 or less in terms of weight ratio.

17. The microbial oil/lipid according to claim 15 or 16, wherein a compositional ratio of a total of C24:0, C22:0, and C20:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.0 or less, 1/3.9 or less, or 1/4.8 or less in terms of weight ratio.

18. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of an oil/lipid, and comprising arachidonic acid in a content of 0.01 wt.% or less ,wherein a compositional ratio of a total of C24:0 and C22:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.1 or less, 1/4.0 or less, or 1/5.0 or less in terms of weight ratio.

19. The microbial oil/lipid according to claim 18, wherein a compositional ratio of a total of C24:0, the C22:0, and C20:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.0 or less, 1/3.9 or less, or 1/4.8 or less in terms of weight ratio.

20. A microbial oil/lipid comprising dihomo-γ-linolenic acid as a constituent fatty acid of the oil/lipid, and comprising arachidonic acid in a content of 0.01 wt.% or less ,wherein a compositional ratio of a total of C24:0, C22:0, and C20:0 to dihomo-γ-linolenic acid in

the constituent fatty acids of the oil/lipid is 1/3.0 or less, 1/3.9 or less, or 1/4.8 or less in terms of weight ratio.

21. The microbial oil/lipid according to any one of claims 11 to 20, comprising substantially no arachidonic acid in the constituent fatty acids of the oil/lipid, or comprising arachidonic acid in a content of 0.3 wt.% or less, 0.2 wt.% or less, 0.1 wt.% or less, 0.05 wt.% or less, 0.04 wt.% or less, 0.03 wt.% or less, or 0.01 wt.% or less.

22. The microbial oil/lipid according to any one of claims 11 to 21, wherein the content of dihomo-γ-linolenic acid is more than 30 wt.%, more than 32 wt.%, or more than 34 wt.%.

23. The microbial oil/lipid according to any one of claims 1 to 22, wherein the microbial oil/lipid is an oil/lipid derived from a filamentous fungus.

24. The microbial oil/lipid according to claim 23, wherein the filamentous fungus is a filamentous fungus of the genus *Mortierella*.

25. The microbial oil/lipid according to any one of claims 1 to 24, comprising no Δ5 desaturase inhibitor.

26. A microbial oil/lipid comprising a microbial oil/lipid described in any one of claims 1 to 25, wherein the microbial oil/lipid is a crude oil/lipid.

27. A pharmaceutical composition comprising a microbial oil/lipid described in any one of claims 1 to 26.

28. An anti-allergic agent or an anti-inflammatory agent comprising a microbial oil/lipid described in any one of claims 1 to 26.

29. A lower alcohol ester composition or a free fatty acid composition comprising dihomo-γ-linolenic acid, obtained or obtainable by a method comprising providing a

microbial oil/lipid described in any one of claims 1 to 26 to an ester exchange reaction or a hydrolysis reaction.

30. The composition according to claim 29, comprising dihomo-γ-linolenic acid in a content of greater than 30 wt.%, greater than 32 wt.%, or greater than 34 wt.%.

31. The composition according to claim 29 or 30, comprising substantially no arachidonic acid, or comprising arachidonic acid in a content of 0.3 wt.% or less, 0.2 wt.% or less, 0.1 wt.% or less, 0.05 wt.% or less, 0.04 wt.% or less, 0.03 wt.% or less, or 0.01 wt.% or less.

32. The composition according to any one of claims 29 to 31, wherein a content of C24:0 is 8.5 wt.% or less, 7.0 wt.% or less, 6.0 wt.% or less, or 5.5 wt.% or less.

33. The composition according to any one of claims 29 to 32, wherein a total content of C24:0 and C22:0 is 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, 8.0 wt.% or less, or 7.5 wt.% or less.

34. The composition according to any one of claims 29 to 33, wherein a content of C24:0, C22:0, and C20:0 is 12.0 wt.% or less, 11.0 wt.% or less, 10.0 wt.% or less, 9.0 wt.% or less, or 8.0 wt.% or less.

35. The composition according to any one of claims 29 to 34, wherein a compositional ratio of arachidonic acid to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/120 or less, 1/180 or less, 1/360 or less, 1/1000 or less, 1/2350 or less, or 1/3000 or less in terms of weight ratio.

36. The composition according to any one of claims 29 to 35, wherein a compositional ratio of C24:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/4.1 or less, 1/5.0 or less, or 1/6.0 or less in terms of weight ratio.

37. The composition according to any one of claims 29 to 36, wherein a compositional ratio of a total of C24:0 and C22:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.1 or less, 1/4.0 or less, or 1/5.0 or less in terms of weight ratio.

38. The composition according to any one of claims 29 to 37, wherein a compositional ratio of a total of C24:0, C22:0, and C20:0 to dihomo-γ-linolenic acid in the constituent fatty acids of the oil/lipid is 1/3.0 or less, 1/3.9 or less, or 1/4.8 or less in terms of weight ratio.

39. The composition according to any one of claims 29 to 38 for use in medicine, for example, for use as an anti-allergic agent or an anti-inflammatory agent.

40. Use of a microbial oil/lipid described in any one of claims 1 to 26, or of a composition described in any one of claims 29 to 39, in the production of foodstuffs, supplements, medicaments, cosmetics, or animal feed.

41. A microbial biomass comprising a microbial oil/lipid described in any one of claims 1 to 26.

42. A foodstuff, supplement, medicament, cosmetic, or animal feed comprising a microbial biomass described in claim 41.

43. A culture comprising a microbial biomass described in claim 41.

44. The culture according to claim 43, comprising the microbial oil/lipid in a content of 0.4 g/liter or more.

45. A method of producing a dihomo-γ-linolenic acid-containing microbial oil/lipid comprising substantially no ARA, the method comprising culturing, in a culture medium, a microorganism strain having a mutation in a Δ5 desaturase gene, to produce the dihomo-γ-linolenic acid-containing microbial oil/lipid.

46. The method according to claim 45, wherein the microorganism strain has a gene mutation that results in an amino acid substitution of Y310C of SEQ ID NO: 3 of a Δ5 desaturase.

47. The method according to claim 45 or 46, wherein the microorganism strain has a base deletion at positions from 2206 to 2234 of SEQ ID NO: 1 of the Δ5 desaturase gene.

48. The method according to any one of claims 45 to 47, wherein the microorganism strain is a strain of a microorganism belonging to the genus *Mortierella*.

49. The method according to any one of claims 45 to 48, wherein the microorganism having the accession number FERM BP-02778 is used as the microorganism strain.

50. The microorganism having accession number FERM BP-02778.