WHAT IS CLAIMED IS:

1. A cosmetic composition for lightening the skin and/or hair of a subject, the composition comprising a lignin peroxidase, a hydrogen peroxide-producing enzyme, and a substrate of said hydrogen peroxide-producing enzyme, wherein said hydrogen peroxide-producing enzyme comprises glucose oxidase and said substrate comprises D-glucose.

2. The composition of claim 1, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2.

3. A cosmetic composition for lightening the skin and/or hair of a subject, the composition comprising a lignin peroxidase, a hydrogen peroxide-producing enzyme, and a substrate of said hydrogen peroxide-producing enzyme, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2.

4. The composition of claim 3, wherein said hydrogen peroxide-producing enzyme is selected from the group consisting of a glucose oxidase, a hexose oxidase, a cholesterol oxidase, an aryl alcohol oxidase, an L-gulonolactone oxidase, a galactose oxidase, a pyranose-2-oxidase, a pyridoxine-4-oxidase, an alcohol oxidase, a 2-hydroxy-acid oxidase, a choline oxidase, a long-chain-alcohol oxidase, a glycerol-3-phosphate oxidase, a D-arabinono-1,4-lactone oxidase, a vanillyl alcohol oxidase, an alditol oxidase, a prosolanapyrone II oxidase, a paromamine 6'-oxidase, a glyoxal oxidase, a veratryl alcohol oxidase, an alcohol dehydrogenase, a cellobiose dehydrogenase, an aldehyde oxidase, an oxalate oxidase, an aryl aldehyde oxidase, a dihydroorotate oxidase, a pyrroloquinoline-quinone synthase, an L-amino acid oxidase, an L-glutamate oxidase, a polyamine oxidase, an NAD(P)H oxidase, aurate oxidase, a hydroxylamine oxidase, a thiol oxidase, aglutathione oxidase, a cytochrome c oxidase, a xanthine oxidase and a superoxide dismutase.

5. The composition of any one of claims 1 to 4, wherein a concentration of said lignin peroxidase is in a range of from 1.25 units/gram to 125 units/gram.

6. The composition of any one of claims 1 to 5, wherein a concentration of said hydrogen peroxide-producing enzyme is in a range of from 0.125 to 1250 units/gram.

7. The composition of any one of claims 1 to 6, wherein a concentration of said substrate of said hydrogen peroxide-producing enzyme is in a range of from 0.0175 μmole/gram to 175 μmole/gram.

8. The composition of any one of claims 1 to 7, further comprising an oxidizing mediator.

9. The composition of claim 8, wherein said oxidizing mediator is selected from the group consisting of veratryl alcohol, veratrole and 1,4-dimethoxybenzene.

10. The composition of any one of claims 8 to 9, wherein a concentration of said oxidizing mediator is in a range of from 0.03 μmole/gram to 300 μmole/gram.

11. The composition of any one of claims 1 to 10, wherein said lignin peroxidase is a lignin peroxidase of a white rot fungus.

12. The composition of any one of claims 1 to 10, wherein said lignin peroxidase is an extract of a *Phanerochaete chrysosporium* fungus.

13. The composition of any one of claims 1 to 12, wherein said cosmetic composition is in a form selected from the group consisting of a mask, a serum, a lotion, a cream, a shampoo, a gel and a toner.

14. The composition of any one of claims 1 to 13, further comprising a cosmetically acceptable carrier.

15. The composition of any one of claims 1 to 14, being packaged in an air-tight container.

16. A kit for lightening the skin and/or hair of a subject, the kit comprising a hydrogen peroxide-producing enzyme, a substrate of said hydrogen peroxide-producing enzyme and a lignin peroxidase, wherein said hydrogen peroxide-producing enzyme comprises glucose oxidase and said substrate comprises D-glucose, and wherein at least one of said hydrogen peroxide-producing enzyme, said substrate of said hydrogen peroxide-producing enzyme and said lignin peroxidase forms a part of a composition which is packaged individually within the kit.

17. The kit of claim 16, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2.

18. The kit of any one of claims 16 to 17, comprising:

a first composition comprising said lignin peroxidase at a concentration in a range of from 2.5 to 250 units/gram, and said glucose oxidase at a concentration in a range of from 2.5 to 250 units/gram; and

a second composition comprising said D-glucose at a concentration in a range of from 0.35 μmole/gram to 35 μmole/gram.

19. A kit for lightening the skin and/or hair of a subject, the kit comprising a hydrogen peroxide-producing enzyme, a substrate of said hydrogen peroxide-producing enzyme and a lignin peroxidase, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2, and wherein at least one of said hydrogen peroxide-producing enzyme, said substrate of said hydrogen peroxide-producing enzyme and said lignin peroxidase forms a part of a composition which is packaged individually within the kit.

20. The kit of claim 19, wherein said hydrogen peroxide-producing enzyme is selected from the group consisting of a glucose oxidase, a hexose oxidase, a cholesterol oxidase, an aryl alcohol oxidase, an L-gulonolactone oxidase, a galactose

oxidase, a pyranose-2-oxidase, a pyridoxine-4-oxidase, an alcohol oxidase, a 2-hydroxy-acid oxidase, a choline oxidase, a long-chain-alcohol oxidase, a glycerol-3-phosphate oxidase, a D-arabinono-1,4-lactone oxidase, a vanillyl alcohol oxidase, an alditol oxidase, a prosolanapyrone II oxidase, a paromamine 6'-oxidase, a glyoxal oxidase, a veratryl alcohol oxidase, an alcohol dehydrogenase, a cellobiose dehydrogenase, an aldehyde oxidase, an oxalate oxidase, an aryl aldehyde oxidase, a dihydroorotate oxidase, a pyrroloquinoline-quinone synthase, an L-amino acid oxidase, an L-glutamate oxidase, a polyamine oxidase, an NAD(P)H oxidase, aurate oxidase, a hydroxylamine oxidase, a thiol oxidase, aglutathione oxidase, a cytochrome c oxidase, a xanthine oxidase and a superoxide dismutase.

21. The kit of any one of claims 16 to 20, wherein said hydrogen peroxide-producing enzyme forms a part of a first composition and said substrate forms a part of a second composition, said first and said second compositions being packaged individually within the kit.

22. The kit of claim 21, wherein said first composition further comprises said lignin peroxidase.

23. The kit of claim 21, wherein said second composition further comprises said lignin peroxidase.

24. The kit of claim 21, wherein said lignin peroxidase forms a part of a third composition within the kit, said third composition being packaged individually within the kit.

25. The kit of any one of claims 16 to 20, wherein said hydrogen peroxide-producing enzyme and said substrate of said hydrogen peroxide-producing enzyme are packaged together in an air-tight package within the kit.

26. The kit of any one of claims 16 to 25, wherein a concentration of said lignin peroxidase in a composition comprising said lignin peroxidase is in a range of from 2.5 to 250 units/gram.

27. The kit of any one of claims 16 to 26, comprising an oxidizing mediator, said hydrogen peroxide-producing enzyme, said substrate of said hydrogen peroxide-producing enzyme and said lignin peroxidase.

28. The kit of claim 27, wherein said oxidizing mediator forms a part of a composition that comprises said lignin peroxidase.

29. The kit of any one of claims 27 to 28, wherein a concentration of said oxidizing mediator in a composition comprising said oxidizing mediator is in a range of from 0.06 μmole/gram to 600 μmole/gram.

30. The kit of any one of claims 16 to 29, wherein a concentration of said hydrogen peroxide-producing enzyme in a composition comprising said enzyme is in a range of from 0.25 to 2500 units/gram.

31. The kit of any one of claims 16 to 30, wherein a concentration of said substrate in a composition comprising said substrate is in a range of from 0.035 μmole/gram to 350 μmole/gram.

32. The kit of any one of claims 16 to 31, wherein said lignin peroxidase is a lignin peroxidase of a white rot fungus.

33. The kit of any one of claims 16 to 31, wherein said lignin peroxidase is an extract of a *Phanerochaete chrysosporium* fungus.

34. The kit of any one of claims 16 to 33, wherein said composition which is packaged individually within the kit is in a form selected from the group consisting of a mask, a serum, a lotion, a cream, a shampoo, a gel and a toner.

35. The kit of any one of claims 16 to 33, wherein said composition which is packaged individually within the kit further comprises a cosmetically acceptable carrier.

36. A cosmetic method of lightening the skin and/or hair of a subject, the method comprising contacting the skin and/or hair region of the subject with a composition comprising a lignin peroxidase, a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme, wherein said hydrogen peroxide-producing enzyme comprises glucose oxidase and said substrate comprises D-glucose, thereby lightening the skin and/or hair of the subject.

37. The method of claim 36, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2.

38. A cosmetic method of lightening the skin and/or hair of a subject, the method comprising contacting the skin and/or hair region of the subject with a composition comprising a lignin peroxidase, a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2, thereby lightening the skin and/or hair of the subject.

39. The method of any one of claims 36 to 38, wherein said composition further comprises a cosmetically acceptable carrier.

40. The method of any one of claims 36 to 39, wherein said composition is formed by a lignin peroxidase, a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme as packaged within the kit of any one of claims 16 to 35.

41. The method of any one of claims 36 to 38, wherein said composition is the composition of any one of claims 1 to 15.

42. The method of any one of claims 36 to 41, wherein said contacting is effected at least five times.

43. The method of any one of claims 36 to 42, wherein said contacting is effected once or twice per day.

44. The composition of any one of claims 1 to 15, the kit of any one of claims 16 to 35 or the method of any one of claims 36 to 43, wherein said lightening said skin comprises lightening whole skin complexion.

45. The composition of any one of claims 1 to 15, the kit of any one of claims 16 to 35 or the method of any one of claims 36 to 43, wherein said skin comprises an uneven skin tone, dark spot(s), freckle(s), melasma, hyperpigmentation, skin discoloration, age spot(s), acne mark(s) and/or a scar.

WHAT IS CLAIMED IS:

1. A cosmetic composition for lightening a skin and/or hair of a subject, the composition comprising a lignin peroxidase, a hydrogen peroxide-producing enzyme, and a substrate of said hydrogen peroxide-producing enzyme.

2. The composition of claim 1, wherein a concentration of said lignin peroxidase is in a range of from 1.25 units/gram to 125 units/gram.

3. The composition of any one of claims 1 to 2, wherein a concentration of said hydrogen peroxide-producing enzyme is in a range of from 0.125 to 1250 units/gram.

4. The composition of any one of claims 1 to 3, wherein a concentration of said substrate of said hydrogen peroxide-producing enzyme is in a range of from 0.0175 μmole/gram to 175 μmole/gram.

5. The composition of any one of claims 1 to 4, further comprising an oxidizing mediator.

6. The composition of claim 5, wherein said oxidizing mediator is selected from the group consisting of veratryl alcohol, veratrole and 1,4-dimethoxybenzene.

7. The composition of any one of claims 5 to 6, wherein a concentration of said oxidizing mediator is in a range of from 0.03 μmole/gram to 300 μmole/gram.

8. The composition of any one of claims 1 to 7, wherein said hydrogen peroxide-producing enzyme is selected from the group consisting of a glucose oxidase, a hexose oxidase, a cholesterol oxidase, an aryl alcohol oxidase, an L-gulonolactone oxidase, a galactose oxidase, a pyranose-2-oxidase, a pyridoxine-4-oxidase, an alcohol oxidase, a 2-hydroxy-acid oxidase, a choline oxidase, a long-chain-alcohol oxidase, a glycerol-3-phosphate oxidase, a D-arabinono-1,4-lactone oxidase, a vanillyl alcohol

oxidase, an alditol oxidase, a prosolanapyrone II oxidase, a paromamine 6'-oxidase, a glyoxal oxidase, a veratryl alcohol oxidase, an alcohol dehydrogenase, a cellobiose dehydrogenase, an aldehyde oxidase, an oxalate oxidase, an aryl aldehyde oxidase, a dihydroorotate oxidase, a pyrroloquinoline-quinone synthase, an L-amino acid oxidase, an L-glutamate oxidase, a polyamine oxidase, an NAD(P)H oxidase, aurate oxidase, a hydroxylamine oxidase, a thiol oxidase, aglutathione oxidase, a cytochrome c oxidase, a xanthine oxidase and a superoxide dismutase.

9. The composition of claim 8, wherein said hydrogen peroxide-producing enzyme comprises glucose oxidase and said substrate comprises D-glucose.

10. The composition of any one of claims 1 to 9, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2.

11. The composition of any one of claims 1 to 10, wherein said lignin peroxidase is a lignin peroxidase of a white rot fungus.

12. The composition of any one of claims 1 to 10, wherein said lignin peroxidase is an extract of a *Phanerochaete chrysosporium* fungus.

13. The composition of any one of claims 1 to 12, wherein said cosmetic composition is in a form selected from the group consisting of a mask, a serum, a lotion, a cream, a shampoo, a gel and a toner.

14. The composition of any one of claims 1 to 13, further comprising a cosmetically acceptable carrier.

15. The composition of any one of claims 1 to 14, being packaged in an air-tight container.

16. A kit for lightening a skin and/or hair of a subject, the kit comprising a hydrogen peroxide-producing enzyme, a substrate of said hydrogen peroxide-producing

enzyme and a lignin peroxidase, wherein at least one of said hydrogen peroxide-producing enzyme, said substrate of said hydrogen peroxide-producing enzyme and said lignin peroxidase forms a part of a composition which is packaged individually within the kit.

17. The kit of claim 16, wherein said hydrogen peroxide-producing enzyme forms a part of a first composition and said substrate forms a part of a second composition, said first and said second compositions being packaged individually within the kit.

18. The kit of claim 17, wherein said first composition further comprises said lignin peroxidase.

19. The kit of claim 17, wherein said second composition further comprises said lignin peroxidase.

20. The kit of claim 17, wherein said lignin peroxidase forms a part of a third composition within the kit, said third composition being packaged individually within the kit.

21. The kit of claim 16, wherein said hydrogen peroxide-producing enzyme and said substrate of said hydrogen peroxide-producing enzyme are packaged together in an air-tight package within the kit.

22. The kit of any one of claims 16 to 21, wherein a concentration of said lignin peroxidase in a composition comprising said lignin peroxidase is in a range of from 2.5 to 250 units/gram.

23. The kit of any one of claims 16 to 22, comprising an oxidizing mediator, said hydrogen peroxide-producing enzyme, said substrate of said hydrogen peroxide-producing enzyme and said lignin peroxidase.

24. The kit of claim 23, wherein said oxidizing mediator forms a part of a composition that comprises said lignin peroxidase.

25. The kit of any one of claims 23 to 24, wherein a concentration of said oxidizing mediator in a composition comprising said oxidizing mediator is in a range of from 0.06 μmole/gram to 600 μmole/gram.

26. The kit of any one of claims 16 to 25, wherein a concentration of said hydrogen peroxide-producing enzyme in a composition comprising said enzyme is in a range of from 0.25 to 2500 units/gram.

27. The kit of any one of claims 16 to 26, wherein a concentration of said substrate in a composition comprising said substrate is in a range of from 0.035 μmole/gram to 350 μmole/gram.

28. The kit of any one of claims 16 to 27, wherein said hydrogen peroxide-producing enzyme is selected from the group consisting of a glucose oxidase, a hexose oxidase, a cholesterol oxidase, an aryl alcohol oxidase, an L-gulonolactone oxidase, a galactose oxidase, a pyranose-2-oxidase, a pyridoxine-4-oxidase, an alcohol oxidase, a 2-hydroxy-acid oxidase, a choline oxidase, a long-chain-alcohol oxidase, a glycerol-3-phosphate oxidase, a D-arabinono-1,4-lactone oxidase, a vanillyl alcohol oxidase, an alditol oxidase, a prosolanapyrone II oxidase, a paromamine 6'-oxidase, a glyoxal oxidase, a veratryl alcohol oxidase, an alcohol dehydrogenase, a cellobiose dehydrogenase, an aldehyde oxidase, an oxalate oxidase, an aryl aldehyde oxidase, a dihydroorotate oxidase, a pyrroloquinoline-quinone synthase, an L-amino acid oxidase, an L-glutamate oxidase, a polyamine oxidase, an NAD(P)H oxidase, aurate oxidase, a hydroxylamine oxidase, a thiol oxidase, a glutathione oxidase, a cytochrome c oxidase, a xanthine oxidase and a superoxide dismutase.

29. The kit of claim 28, wherein said hydrogen peroxide-producing enzyme comprises glucose oxidase and said substrate comprises D-glucose.

30. The kit of claim 29, comprising:

a first composition comprising said lignin peroxidase at a concentration in a range of from 2.5 to 250 units/gram, and said glucose oxidase at a concentration in a range of from 2.5 to 250 units/gram; and

a second composition comprising said D-glucose at a concentration in a range of from 0.35 μmole/gram to 35 μmole/gram.

31. The kit of any one of claims 16 to 30, wherein said lignin peroxidase is isoenzyme H1 or a modified form of isoenzyme H2.

32. The kit of any one of claims 16 to 31, wherein said lignin peroxidase is a lignin peroxidase of a white rot fungus.

33. The kit of any one of claims 16 to 31, wherein said lignin peroxidase is an extract of a *Phanerochaete chrysosporium* fungus.

34. The kit of any one of claims 16 to 33, wherein said composition which is packaged individually within the kit is in a form selected from the group consisting of a mask, a serum, a lotion, a cream, a shampoo, a gel and a toner.

35. The kit of any one of claims 16 to 33, wherein said composition which is packaged individually within the kit further comprises a cosmetically acceptable carrier.

36. A cosmetic method of lightening a skin and/or hair of a subject, the method comprising contacting a skin and/or hair region of the subject with a composition comprising a lignin peroxidase, a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme, thereby lightening the skin and/or hair of the subject.

37. The method of claim 36, wherein said composition further comprises a cosmetically acceptable carrier.

38. The method of any one of claims 36 to 37, wherein said composition is formed by a lignin peroxidase, a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme as packaged within the kit of any one of claims 16 to 35.

39. The method of claim 36, wherein said composition is the composition of any one of claims 1 to 15.

40. The method of any one of claims 36 to 39, wherein said contacting is effected at least five times.

41. The method of any one of claims 36 to 40, wherein said contacting is effected once or twice per day.

42. The composition of any one of claims 1 to 15, the kit of any one of claims 16 to 35 or the method of any one of claims 36 to 41, wherein said lightening said skin comprises lightening whole skin complexion.

43. The composition of any one of claims 1 to 15, the kit of any one of claims 16 to 35 or the method of any one of claims 36 to 41, wherein said skin comprises an uneven skin tone, dark spot(s), freckle(s), melasma, hyperpigmentation, skin discoloration, age spot(s), acne mark(s) and/or a scar.

44. A cosmetic or pharmaceutical composition for application to skin, hair and/or a nail of a subject, the composition comprising a hydrogen peroxide-producing enzyme, and a substrate of said hydrogen peroxide producing enzyme.

45. The composition of claim 44, further comprising at least one agent which exhibits a cosmetic or pharmaceutical activity in a presence of hydrogen peroxide.

46. A kit for applying a cosmetic or pharmaceutical composition to skin, hair and/or a nail of a subject, said cosmetic or pharmaceutical composition comprising

hydrogen peroxide, the kit comprising a first composition comprising a hydrogen peroxide-producing enzyme, and a second composition comprising a substrate of said hydrogen peroxide-producing enzyme.

47. The kit of claim 46, further comprising at least one agent which exhibits a cosmetic or pharmaceutical activity in a presence of hydrogen peroxide.

48. A method of administering hydrogen peroxide to skin, hair and/or a nail of a subject, the method comprising contacting a skin, hair and/or a nail region of the subject with a composition comprising a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme, thereby generating hydrogen peroxide on the skin, hair and/or nail.

49. The method of claim 48, wherein said composition is formed by a hydrogen peroxide-producing enzyme and a substrate of said hydrogen peroxide-producing enzyme is packaged within the kit of any one of claims 46 to 47.

50. The method of claim 48, wherein said composition is the composition of any one of claims 44 to 45.