CLAIMS

1. A method for producing dihydroxyindoles, comprising:

a step 1 of obtaining an aqueous first solution including dihydroxyindoles obtained by causing at least a material selected from the group consisting of 3-(3,4-dihydroxyphenyl)alanine and a derivative of 3-(3,4-dihydroxyphenyl)alanine to react with an oxidizing agent; and

a step 2 of obtaining an oleaginous second solution in which the dihydroxyindoles are extracted in an extraction solvent by mixing the first solution obtained in the step 1 with the extraction solvent, wherein

before the first solution obtained in the step 1 is mixed with the extraction solvent in the step 2, a water-insoluble by-product is removed from the first solution.

2. The method according to claim 1, wherein the water-insoluble by-product is removed by filtration.

3. The method according to claim 2, wherein the filtration uses a filter medium having an aperture of 5.0 μm or less.

4. The method according to claim 2, wherein the filtration uses a filter medium having an aperture of 1.5 μm or less.

5. The method according to any one of claims 2 to 4, wherein the filtration uses a filter medium having an aperture of 0.1 μm or more.

6. The method according to any one of claims 2 to 5, wherein the filtration is formed by causing the first solution to circulate in a circulation pipe provided with a filter including the filter medium.

7. The method according to claim 6, wherein the number of circulations of the first solution in the circulation pipe is twice or more and 10 times or less.

8. The method according to any one of claims 2 to 5, wherein the filtration is performed through one-pass filtration by distributing the first solution in a pipe provided with a filter including the filter medium.

9. The method according to any one of claims 1 to 8, wherein in the step 1, an aqueous solution or an aqueous suspension including 0.2% by mass or more of at least a material selected from the group consisting of the 3-(3,4-dihydroxyphenyl)alanine and a derivative of the 3-(3,4-dihydroxyphenyl)alanine is mixed with an aqueous solution or an aqueous suspension of the oxidizing agent.

10. The method according to any one of claims 1 to 9, wherein in the step 1, an aqueous solution or an aqueous suspension including 0.3% by mass or more of at least a material selected from the group consisting of the 3-(3,4-dihydroxyphenyl)alanine and a derivative of the 3-(3,4-dihydroxyphenyl)alanine is mixed with an aqueous solution or an aqueous suspension of the oxidizing agent.

11. The method according to claim 9 or 10, wherein the oxidizing agent includes alkali metal salt of hexacyanoferrate(III) acid.

12. The method according to any one of claims 9 to 11, wherein an aqueous solution or an aqueous suspension of the oxidizing agent includes a base agent.

13. The method according to claim 12, wherein the base agent includes alkali metal salt of hydrogencarbonate ions.

14. The method according to claim 12 or 13, wherein a content of the base agent with respect to a mole number of the 3-(3,4-dihydroxyphenyl)alanine and the derivative of 3-(3,4-dihydroxyphenyl)alanine is 3.9 equivalents or more and 9.0 equivalents or less.

15. The method according to any one of claims 1 to 14, wherein the extraction solvent includes an organic solvent whose octanol/water distribution coefficient is 0 or more and 4.0 or less.

16. The method according to claim 15, wherein the extraction solvent includes ethyl acetate.