

with water and neutralized to obtain a protein fraction mainly composed of 11S protein fraction. The soluble fraction was subjected to isoelectric precipitation to remove whey and the precipitate was washed with water and neutralized to obtain a protein fraction mainly composed of 7S protein fraction.

EXPERIMENT 2

The protein isolate mainly composed of 11S protein fraction obtained in Example 4 and the fraction mainly composed of 11S protein fraction obtained in Reference Example 2 were subjected to SDS-polyacrylamide electrophoresis according to Laemmly, U.K., Nature, 227, 680, 1970 and Weber, K. and Osborn, M., J. B. C, 244, 4406, 1969. The electrophoresis patterns are shown in FIGS. 4 and 5.

As a reference, SDS-polyacrylamide electrophoresis pattern of acid precipitated protein obtained from soy-milk as in Example 4 by isoelectric precipitation and washing with water.

According to staining of the electrophoresis patterns, it was determined that the protein isolate mainly composed of 11S protein fraction of Example 4 contains 88% by weight of 11S protein fraction and the protein isolate mainly composed of 7S protein fraction of Example 4 contains 88% by weight of 7S protein fraction.

EXAMPLE 5

Soy-milk was treated according to the same procedure as in Example 4 except that SBS was added to soy-milk.

When the yield of a protein isolate mainly composed of 11S protein fraction was expressed as a relative value by taking that of after 6 hour electrolytic reduction in Example 4 as 100, in case of using 10 mg of SBS/100 ml of soy-milk, it was 14 before electrolytic reduction, 56 after electrolytic reduction for 2 hours and 100 after electrolytic reduction for 4 hours. In case of using 60 mg of SBS/100 ml of soy-milk, it was 75 before electrolytic reduction and 100 after electrolytic reduction for 2 hours. That is, by using SBS, the efficiency of electrolytic reduction is improved, even if the electrolytic reduction time is decreased. Further, it has been found that the amount of SBS to be used and, therefore, the amount of SBS remaining in a product can be reduced by the electrolytic reduction treatment.

EXAMPLE 6

Soy-milk was treated according to Example 4 except that cysteine was added to soy-milk. The same yield of the protein isolate mainly composed of 11S protein fraction as that after electrolytic reduction for 6 hours in Example 4 was obtained after electrolytic reduction for 5 hours in case of using 10 mg of cysteine /100 ml of soy-milk or after electrolytic reduction for 3 hours in case of using 30 mg of cysteine/100 ml of soy-milk.

What is claimed is:

1. A method for fractionation of a vegetable protein which comprises dispersing a source of the vegetable

protein containing insoluble carbohydrate in an aqueous system at pH of 7.1 to 9 under reduction conditions with

- (a) at least 0.5% by weight of a sulfite compound based on the source,
- (b) at least 5 m moles of a glutathione compound per 100 g of the source, or
- (c) at least 5 m moles of a cysteine compound per 100 g of the source

without the addition of sodium chloride and then bringing the resulting mixture to pH 5.5 to 7.0 at a temperature of 20° C. or lower to fractionate the mixture into a soluble or dispersing fraction and an insoluble or precipitate fraction accompanied by the insoluble carbohydrates.

2. A method according to claim 1, wherein the vegetable protein is soybean protein.

3. A method according to claim 1, wherein the sulfite compound is selected from a group consisting of sulfurous acid, alkali metal sulfites, ammonium sulfite, alkali metal bisulfites, ammonium bisulfite, alkali metal pyrosulfites, ammonium pyrosulfite, alkali metal metabisulfites, ammonium metabisulfite and sulfur dioxide.

4. A method according to claim 1, wherein a glutathione compound or a cysteine compound is selected from the group consisting of glutathione, glutathione hydrochloride, cysteine and cysteine hydrochloride.

5. A method according to claim 1, wherein the method further comprises isolating the insoluble fraction, and dispersing it in warm water to remove a precipitate.

6. A method according to claim 1, wherein the method further comprises isolating the soluble fraction, subjecting it to isoelectric precipitation, separating a precipitate, neutralizing it, heating and then drying it.

7. A method for fractionation of a vegetable protein composed of 7S and 11S protein fractions which comprises subjecting a source of the vegetable protein containing insoluble carbohydrate in an aqueous system to electrolytic reduction and then bringing the system to pH 5.5 to 7.0 and the temperature to 20° C. or lower to fractionate the system into a soluble or dispersing fraction and an insoluble or precipitate fraction.

8. A method according to claim 7, wherein the vegetable protein is soybean protein.

9. A method according to claim 7, wherein the electrolytic reduction is carried out in the presence of a sulfite compound, a sulfate compound, a glutathione compound or a cysteine compound.

10. A method according to claim 9, wherein the sulfite compound is selected from a group consisting of sulfurous acid, alkali metal sulfites, ammonium sulfite, alkali metal bisulfites, ammonium bisulfite, alkali metal pyrosulfites, ammonium pyrosulfite, alkali metal metabisulfites, ammonium metabisulfite and sulfur dioxide.

11. A method according to claim 9, wherein the sulfate compound, the glutathione compound or the cysteine compound is selected from the group consisting of sodium sulfate, glutathione, glutathione hydrochloride, cysteine and cysteine hydrochloride.

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