

TABLE IV-continued

pH	Whey Soluble Protein		Curd Insoluble Protein	
	% 11S	% 7S	% 11S	% 7S
5.0	0	42.4	60.9	22.2

Table V reports the relative percentage of 7S and 11S protein (combined 7S and 11S total weight) as whey and curded protein at the listed pH levels. As illustrated by Table V, the percentage of water-soluble 11S protein remaining in the whey fraction is minimized at a pH 5.3-5.7 which, in turn, also provides a higher purity 11S curd. Conversely, the 7S solubility (whey) is optimized within the pH 5.3-5.7 range.

TABLE V

pH	Whey 11S/7S	Curd 11S/7S
7.5	63.5/36.5	—
6.0	30.3/69.7	95.4/4.6
5.7	21.8/78.2	94.6/5.4
5.5	21.4/78.6	90.1/9.9
5.3	4.2/95.8	82.4/17.6
5.0	0/100	73.3/26.7

This example was repeated except that the extraction and fractionation were accomplished with an aqueous solution consisting of water, 0.06 M sodium chloride and 0.48 mM SO_3^- . Table VI reports the results of this study.

TABLE VI

pH	Soluble Whey		Insoluble Curd	
	% 11S	% 7S	% 11S	% 7S
6.46	59.4	40.6	97.5	2.5
6.00	40.9	59.1	96.1	3.9
5.71	24.9	75.1	93.9	6.1
5.48	18.0	82.0	89.6	10.4
5.26	8.8	91.2	89.7	10.3
5.02	0	100	79.3	20.7
4.6	0	100	65.8	34.2
4.4	0	100	66.3	33.7

As will be observed from the Table VI data, the pH 6.0 11S precipitates employing the sulfurous ion and water-soluble salts in the amounts specified provides particularly effective fractionation of the 7S and 11S proteins.

What is claimed is:

1. A method for fractionating and recovering an enriched 11S protein fraction from a crude vegetable protein aqueous solution which contains, on a total protein weight basis, water-soluble 7S protein and water-soluble 11S protein as the major protein components of said solution, said method comprising:

(A) providing to said solution a sufficient amount of:

(i) from about 0.05 mM to about 5.0 mM sulfite ion; and

(ii) water-soluble salt to provide an ionic solution strength ranging from about 0.0005u. to about 0.2u;

(B) precipitating at least a major weight of said 11S protein from said solution within the pH 5.3-6.3 range; and

(C) recovering the precipitated 11S protein from said solution.

2. The method according to claim 1 wherein the sulfurous ion content of said solution ranges from about 0.1 mM to about 2.0 mM.

3. The method according to claim 2 wherein the ionic solution strength of the water-soluble salt ranges from about 0.01u. to about 0.06u.

4. The method according to claim 3 wherein the vegetable protein consists essentially of soy protein and the 11S is precipitated from said solution at a pH ranging from about 5.8 to about 6.3

5. The method according to claim 4 wherein, after recovery of the precipitated 11S protein, the aqueous solution is adjusted within the pH 5.3 to 5.8 range to precipitate at least a major portion of the water-soluble 11S protein remaining in said solution along with a minor portion of said water-soluble 7S protein.

6. The method according to claim 5 wherein said precipitated mixture of 7S protein and 11S protein is recovered from said solution to provide an enriched 7S protein solution.

7. The method according to claim 5 wherein the protein solution is adjusted to a pH ranging from about 5.3 to about 5.5 and a 7S and 11S mixture is precipitated from said protein solution.

8. The method according to claim 7 wherein the precipitated 7S and 11S mixture is recovered from said solution to provide an enriched 7S solution and a dry, enriched 7S isolate is recovered from said enriched 7S solution.

9. A method for preparing 7S and 11S protein fractions from a clarified 7S and 11S protein mixture, said process comprising:

(A) adjusting a clarified extract, containing a mixture of 7S and 11S protein, from about 0.1 mM to about 2.0 mM sulfite ion and sufficient water-soluble salt to provide an ionic solution strength ranging from about 0.005u. to about 0.1u., to a pH 5.8-6.3 to precipitate an 11S protein fraction from the clarified extract;

(B) recovering the precipitated 11S protein fraction from the clarified extract;

(C) adjusting the clarified extract within the pH 5.3-5.8 range to precipitate along with a portion of the extracted 7S protein at least a major weight portion of the 11S protein remaining in said clarified extract to provide a 7S and 11S precipitate mixture;

(D) recovering the 7S and 11S precipitate mixture from the extract; and

(E) recovering another protein fraction from said extract which contains (on a weight basis) 7S protein as the major protein constituent.

10. The method according to claim 9 wherein the ionic solution strength of the water-soluble salt ranges from 0.01u. to 0.06u.

11. The method according to claim 10 wherein the sulfite ion ranges from about 5.0 mM to about 1.5 mM inclusive.

12. The method according to claim 11 wherein at least a major weight portion of the water-soluble 11S protein is precipitated from said solution within the pH 5.8-6.3 range.

13. The method according to claim 11 wherein a sufficient amount of water-soluble 11S protein is precipitated from said solution within the pH 5.3-6.3 range to provide an enriched 7S solution which contains on a total 7S and 11S protein weight basis at least 85% by weight 7S protein.

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