CLAIMS:

1. A method for preparing a pea protein composition comprising:

(a) adding an alkaline phosphate salt composition to an aqueous solution of a pea protein isolate having a protein content of 5-20%, wherein the added alkaline phosphate salt to protein content on a dry weight basis is 3-98%, 3-45%, 4-20%, or 10-95%, wherein the alkaline phosphate salt composition comprises a trisodium or tripotassium salt of an orthophosphate ion;

(b) pasteurizing the solution of step (a) to a temperature of 73-86˚C for at least 30-70 seconds; and

(c) drying the solution of step (b) to form a pea protein composition having a protein content of at least 70%.

2. The method of claim 1, wherein the alkaline phosphate salt composition further comprises metaphosphate, trimetaphosphate, and/or hexametaphosphate with an alkali metal ion and/or an alkaline earth metal ion.

3. The method of claim 2, wherein the alkaline phosphate salt composition comprises:

(a) trisodium phosphate and/or tripotassium phosphate, wherein the alkaline phosphate salt composition comprises trisodium phosphate and/or tripotassium phosphate in an amount of 5-100 wt%, optionally wherein the added alkaline phosphate salt to protein content on a dry weight basis is 3-45%, or 4-20%;

(b) hexametaphosphate sodium salt and/or hexametaphosphate potassium salt; optionally, in an amount of 5-95 wt%, optionally wherein the added alkaline phosphate salt to protein content on a dry weight basis is 10-95%; or

(c) (i) trisodium phosphate and/or tripotassium phosphate;

(ii) disodium phosphate and/or dipotassium phosphate; and

(iii) hexametaphosphate sodium salts and/or hexametaphosphate potassium salts; optionally, 5-20 wt% trisodium phosphate and/or tripotassium phosphate; 20-40 wt% disodium phosphate and/or dipotassium phosphate; and 50-80 wt% hexametaphosphate sodium salts and/or hexametaphosphate potassium salts.

4. The method of claim 1, wherein the aqueous solution of pea protein isolate is pH 5-10; optionally, wherein the pea protein isolate is pH 6.5-9.5.

5. The method of claim 1, wherein the pea protein isolate is:

(a) a base-extracted pea protein isolate; optionally, wherein the base-extracted pea protein isolate is prepared by extraction of a pea protein concentrate solution with 10-100 mM NaOH; or
(b) a neutral-extracted pea protein isolate; optionally, wherein the neutral-extracted pea protein isolate is prepared by extraction of a pea protein concentrate solution with hot water.

6. The method of claim 1, wherein step (c) comprises spray-drying the solution to form a powder pea protein composition; optionally, wherein the powder pea protein composition comprises a protein content of 70-95 wt%.

7. The method of claim 1, wherein:
(a) the pea protein composition exhibits an aqueous solubility at pH 7 of at least 20%, at least 25%, at least 30%, at least 40%, at least 50%, or at least 60%; or
(b) the aqueous solubility at pH 7 of the pea protein composition relative to the aqueous solubility at pH 7 of a pea protein composition prepared without adding an alkaline phosphate salt composition to an aqueous solution of pea protein isolate having a protein content of 5-20% is increased by at least 2-fold, at least 3-fold, at least 4-fold, at least 5-fold, or more.

8. A dried pea protein composition comprising a dried pea protein isolate comprising at least 70 wt% protein content and an added alkaline phosphate salt to protein content on a dry weight basis is 3-98%, 3-45%, 4-20%, or 10-95%, wherein the alkaline phosphate salt comprises a trisodium or tripotassium salt of an orthophosphate ion.

9. The composition of claim 8, wherein the alkaline phosphate salt further comprises metaphosphate, trimetaphosphate, and/or hexametaphosphate with an alkali metal ion and/or an alkaline earth metal ion.

10. The composition of claim 8, wherein the alkaline phosphate salt comprises:
(a) trisodium phosphate and/or tripotassium phosphate, wherein the alkaline phosphate salt comprises trisodium phosphate and/or tripotassium phosphate in an amount of 5-100 wt%, 70-100 wt%, 80-100 wt%, or 90-100 wt%, optionally wherein the added alkaline phosphate salt to protein content on a dry weight basis is 3-45%, or 4-20%;
(b) hexametaphosphate sodium salt and/or hexametaphosphate potassium salt; optionally, in an amount of 5-95 wt%, 50-80%, 70-95 wt%, 80-95 wt%, or 90-95 wt%,

optionally wherein the added alkaline phosphate salt to protein content on a dry weight basis is 10-95%; or

(c) (i) trisodium phosphate and/or tripotassium phosphate; and

(ii) hexametaphosphate sodium salts and/or hexametaphosphate potassium salts; optionally, 5-20 wt% trisodium phosphate and/or tripotassium phosphate, and 50-80 wt% hexametaphosphate sodium salts and/or hexametaphosphate potassium salts.

11. The composition of claim 8, wherein the composition has an aqueous solubility at pH 7:

(a) of at least 20%, at least 25%, at least 30%, at least 40%, at least 50%, or at least 60%; or

(b) relative to the aqueous solubility at pH 7 of a pea protein composition without the alkaline phosphate salt is increased by at least 2-fold, at least 3-fold, at least 4-fold, at least 5-fold, or more.

12. The composition of claim 8, wherein the pea protein isolate is:

(a) a base-extracted pea protein isolate; optionally, a base-extracted pea protein isolate prepared by extraction of a pea protein concentrate solution with 10-100 mM NaOH; or

(b) a neutral-extracted pea protein isolate; optionally, a neutral-extracted pea protein isolate prepared by extraction of a pea protein concentrate solution with hot water.

13. A food or beverage product comprising a pea protein composition according to claim 8.