

sterile. Upon assay of the retentate for carbohydrates, it is found that the spray-dried product contains approximately one-half the carbohydrate endogenous to the whole soybean. Further reductions in the content of carbohydrate may be had through the conventional process known in the art as diafiltration, in which deionized water is mixed with the ultrafiltration retentate to further dissolve salts and carbohydrates and allow their permeation through the ultrafiltration membrane without limiting the flux rate there through by concentration polarization.

Although this invention is described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of equipment and the parameters of the process may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

What is claimed and sought to be secured by Letters Patent of the United States is:

- 1. A cooked soybean product in stable dispersion form having:
 - (a) a yield of at least 70% of the whole soybean;
 - (b) a Hunter L color value in excess of 70;
 - (c) trypsin inhibitors inactivated to less than 10% of the trypsin inhibitors of whole soybeans;
 - (d) a thiobarbituric acid assay of less than 15 p.p.m. TBA value on the basis of moisture free solids.
- 2. A cooked soybean product of spray-dried soymilk wherein said spray-dried soymilk:
 - (a) is soluble in water to at least 50% on a weight basis;
 - (b) forms a stable colloidal suspension;
 - (c) has a Hunter L color value in excess of 70;
 - (d) has trypsin inhibitors inactivated sufficiently to less than 10% of the trypsin inhibitors of whole soybeans;
 - (e) has a thiobarbituric acid assay of less than 15 p.p.m. T.B.A. value basis moisture-free solids; and
 - (f) remains a stable colloidal suspension when aseptically packaged.
- 3. A process for the manufacture of a soybean product from whole soybeans, said product consisting essentially of at least 70% or more of the whole soybean solids in a stable dispersion and containing trypsin inhibitor activity less than 10 percent than that found in whole soybeans with reference to total solids in said product, said process comprising:
 - (a) dry comminuting whole soybeans at room temperature;
 - (b) adding water to the dry comminuted soybeans to form an aqueous slurry containing substantially 10

- to 25 percent by weight of said comminuted soybeans at room temperature;
- (c) quickly subjecting said slurry, shortly after formation, to steam infusion to minimize oxidation of the slurry, providing extreme turbulence and high shear to heat said slurry from room temperature to within a range of substantially 270° F. (121° C.) to 310° F. (154° C.) at a rate of at least substantially 30° F. (11.4° C.) per second while confining said slurry within a vessel and holding said heated slurry for a time within a range of substantially 15-270 seconds, the time and temperature being inversely related;
- (d) rapidly cooling said slurry after heating to below the browning temperature of the slurry; and without further grinding constituting a soybean product in a stable dispersion.
- 4. The process of claim 3 wherein the soybean is dehulled before formation of an aqueous slurry.
- 5. The process of claim 3 wherein the soybean hulls are separated from the slurry after the slurry is cooled below the browning temperature.
- 6. A process for the manufacture of a soybean product from whole soybeans, said product consisting essentially of at least 80% or more of the whole soybean solids in a stable dispersion and containing trypsin inhibitor activity less than 10 percent than that found in whole soybeans with reference to total solids in said product, said process comprising:
 - (a) dry comminuting whole soybeans at room temperature;
 - (b) adding water to the dry comminuted soybeans to form an aqueous slurry containing substantially 10 to 25 percent by weight of said comminuted soybeans at room temperature;
 - (c) quickly subjecting said slurry, shortly after formation, to steam infusion to minimize oxidation of the slurry, providing extreme turbulence and high shear to heat said slurry from room temperature to within a range of substantially 270° F. (121° C.) to 310° F. (154° C.) at a rate of at least substantially 30° F. (11.4° C.) per second while confining said slurry within a vessel and holding said heated slurry for a time within a range of substantially 20-270 seconds, the time and temperature being inversely related;
 - (d) rapidly cooling said slurry after heating to below the browning temperature of the slurry; and without further grinding constituting a soybean product in a stable dispersion.

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