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(54) Title: ULTRASONICALLY-ASSISTED EXTRUSION METHODS FOR MANUFACTURING POWDERED NUTRITIONAL PRODUCTS

(57) Abstract: Disclosed are methods of manufacturing powdered nutritional products, including powdered infant formulas and powdered adult nutritional products, using extrusion. The methods include utilizing ultrasonic energy in the extruder during manufacturing. The application of ultrasonic energy to the extruder allows the fat globules present in raw materials to be effectively emulsified by hydrated protein present in the feed stream such that the resulting powdered extruded product has a low free fat level, is less susceptible to oxidation and rancidity, and can be reconstituted without substantial fat separation.



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