

**POWDERED NUTRITIONAL FORMULATIONS INCLUDING**  
**SPRAY-DRIED PLANT PROTEIN**

**TECHNICAL FIELD OF THE DISCLOSURE**

The present disclosure relates to powdered nutritional formulations including a  
5 dryblended plant protein. At least a portion of the dryblended plant protein has been spray dried  
prior to being dryblended into the powdered nutritional formulation.

**BACKGROUND OF THE DISCLOSURE**

Adult, pediatric, and infant manufactured nutritional liquids and powders comprising a  
targeted selection of nutritional ingredients are well known and widely available, some of which  
10 may provide a sole source of nutrition, while others may provide a supplemental source. These  
nutritionals include powders that can be reconstituted with water or other aqueous liquid, as well  
as concentrated and ready-to-drink nutritional liquids. These powdered nutritional formulations  
and liquids are especially useful when formulated with selected nutritional ingredients, such as  
protein.

15 Powdered nutritional formulations are especially popular for providing nutrition and their  
use continues to increase around the world. These powdered nutritional formulations are  
typically prepared by making at least two separate slurries that are first blended together. One  
slurry may be an aqueous-based slurry and one may be an oil-based slurry. After blending, the  
resulting mixture is generally heat-treated, standardized, heat-treated a second time, spray-dried,  
20 agglomerated and packaged. With this manufacturing process, a substantial amount of energy is  
required to spray-dry the product and the drying process significantly increases manufacturing  
time. Additionally, the spray driers may require frequent cleaning to reduce build up of powder  
in the dryers.

In order to increase throughput and decrease costs, attempts have been made to dryblend  
25 certain components into conventionally prepared base powders such that a reduced amount of  
spray-drying is required during manufacturing. Individual components such as vitamins,  
minerals, carbohydrates, polyunsaturated fatty acids and proteins have been dryblended into base  
powders with mixed results. In many cases, reconstitution has been an issue such that preparing  
a commercially satisfactory beverage is not possible.

There is therefore a need for dryblended powdered nutritional formulations comprising proteins, including plant proteins, that have improved reconstitution characteristics including improved mouthfeel and improved viscosity.

### **SUMMARY OF THE DISCLOSURE**

5           One embodiment of the present disclosure is directed to a powdered nutritional formulation comprising a dryblended plant protein. At least a portion of the dryblended plant protein is spray-dried plant protein.

          Another embodiment of the present disclosure is directed to a powdered nutritional formulation comprising at least one milk protein and at least one spray-dried plant protein. The  
10   spray-dried plant protein comprises up to about 50 wt.% of the total protein in the powdered nutritional formulation.

          Another embodiment of present disclosure is directed to a method of preparing a dryblended powdered nutritional formulation including a spray-dried plant protein. The method comprises preparing a base powder including at least one of a fat, carbohydrate, and protein, and  
15   dryblending into the base powder a spray-dried plant protein.

          It has been found that when plant proteins, such as pea proteins, are dryblended into nutritional bases powders, even at very low concentrations, when the dryblended nutritional powder is reconstituted, it has an undesirable, gritty mouthfeel that may feel slimy. Also, it has been found that over a short period of time, the reconstituted liquid may develop an undesirably  
20   high viscosity that is not commercially acceptable.

          It has now been discovered that the undesirable, gritty mouthfeel of the reconstituted powder resulting from the dryblending of a plant protein into a powdered nutritional formulation can be minimized or eliminated by first spray-drying the plant protein prior to dryblending into the powdered nutritional formulation. It has also been found that spray-drying at least a portion  
25   of the plant protein prior to dryblending into the powdered nutritional formulation significantly reduces or eliminates the issue of an increasing viscosity over a short period of time upon the powdered nutritional formulation being reconstituted with water.

### **DETAILED DESCRIPTION OF THE DISCLOSURE**

The methods of manufacturing dryblended nutritional powders of the present disclosure include preparing a base nutritional powder, which may be a dryblended base nutritional powder or a nutritional powder prepared from one or more slurries that are subsequently dried, and  
5 further dryblending therein a plant protein that has been spray-dried. The powdered nutritional formulations of the present disclosure comprise spray-dried plant proteins and at least one of fat and carbohydrate. These and other essential or optional elements or limitations of the powdered nutritional formulations and methods of manufacturing powdered nutritional formulations of the present disclosure are described in detail hereafter.

10 The term “powdered nutritional formulation” as used herein, unless otherwise specified, refers to dryblended powdered nutritional formulations comprising protein, and specifically plant protein, and at least one of fat and carbohydrate, which are reconstitutable with an aqueous liquid, and which are suitable for oral administration to a human.

The term “spray-dried plant protein” as used herein, unless otherwise specified, refers to  
15 a plant protein, such as pea protein, that has been subjected to a spray-drying process.

The term “dry-blended” as used herein, unless otherwise specified, refers to the mixing of components or ingredients to form a base nutritional powder or, to the addition of a dry, powdered or granulated component or ingredient to a base powder to form a powdered nutritional formulation.

20 The terms “fat” and “oil” as used herein, unless otherwise specified, are used interchangeably to refer to lipid materials derived or processed from plants or animals.

All percentages, parts and ratios as used herein, are by weight of the total formulation, unless otherwise specified. All such weights as they pertain to listed ingredients are based on the active level and, therefore, do not include solvents or by-products that may be included in  
25 commercially available materials, unless otherwise specified.

All references to singular characteristics or limitations of the present disclosure shall include the corresponding plural characteristic or limitation, and vice versa, unless otherwise specified or clearly implied to the contrary by the context in which the reference is made.

All combinations of method or process steps as used herein can be performed in any order, unless otherwise specified or clearly implied to the contrary by the context in which the referenced combination is made.

The various embodiments of the powdered nutritional formulations of the present disclosure may also be substantially free of any optional or selected essential ingredient or feature described herein, provided that the remaining powdered nutritional formulation still contains all of the required ingredients or features as described herein. In this context, and unless otherwise specified, the term “substantially free” means that the selected powdered nutritional formulations contains less than a functional amount of the optional ingredient, typically less than 0.1% by weight, and also including zero percent by weight of such optional or selected essential ingredient.

The powdered nutritional formulations and corresponding manufacturing methods of the present disclosure can comprise, consist of, or consist essentially of the essential elements of the disclosure as described herein, as well as any additional or optional element described herein or otherwise useful in powdered nutritional formulation applications.

### **Product Form**

The powdered nutritional formulations of the present disclosure are dryblended nutritional powders comprising spray-dried plant proteins and at least one of fat and carbohydrate; that is, the powdered nutritional formulations include a spray-dried plant protein that has been dryblended into a base nutritional powder. The base nutritional powder may be a 100% dryblended base nutritional powder, or may be a powder that has been prepared from one or more slurries that have been subjected to a drying process. These powders are typically in the form of flowable or substantially flowable particulate compositions, or at least particulate compositions that can be easily scooped and measured with a spoon or similar other device, wherein the compositions can easily be reconstituted by the intended user with a suitable aqueous liquid, typically water, to form a liquid nutritional formulation for immediate oral or enteral use. In this context, “immediate” use generally means within about 48 hours, most typically within about 24 hours, preferably right after reconstitution.

The powdered nutritional formulations include dryblended plant proteins, at least a portion of which is a plant protein that has been spray-dried. In some embodiments, 100% of the plant protein present in the powdered nutritional formulations is a plant protein that has been

spray-dried. In some embodiments, 100% of the plant protein is dry-blended into the powdered nutritional formulation.

The powdered nutritional formulations may be formulated with sufficient kinds and amounts of nutrients so as to provide a sole, primary, or supplemental source of nutrition, or to provide a specialized powdered nutritional formulation for use in individuals afflicted with specific diseases or conditions. In one exemplary embodiment, the powdered nutritional formulation may be formulated for use with individuals for repairing muscles and maintaining or building muscle mass.

The powdered nutritional formulations may have a caloric density tailored to the nutritional needs of the ultimate user, although in most instances the reconstituted powders comprise from about 100 to about 700 kcal/240 ml, including from about 150 to about 350 kcal/240 ml, and also including from about 200 to about 320 kcal/240 ml.

The powdered nutritional formulations of the present disclosure may be packaged and sealed in single or multi-use containers, and then stored under ambient conditions for up to about 36 months or longer, more typically from about 12 to about 24 months. For multi-use containers, these packages can be opened and then covered for repeated use by the ultimate user, provided that the covered package is then stored under ambient conditions (*e.g.*, avoid extreme temperatures) and the contents used within about one month or so.

### **Plant Protein**

The powdered nutritional formulations comprise dryblended spray-dried plant proteins, which mean that the powdered nutritional formulations are formulated with the addition of plant proteins that have been spray-dried prior to being dryblended into the powdered nutritional formulations. Suitable plant proteins for use in the powdered nutritional formulations include pea protein, soy protein, combinations thereof, and the like. Preferred plant proteins are pea proteins, including pea protein isolate, pea protein concentrate, and sources thereof.

The plant protein is present in the powdered nutritional formulation in an amount of up to 100 wt.%, including from about 5 wt.% to 90 wt.%, including from about 20 wt.% to about 65 wt.%, including from about 30 wt.% to about 50 wt.%, and including from about 40 wt.% to about 45 wt.%. At least a portion of the plant protein is dryblended into the powdered nutritional formulation; that is, at least a portion of the plant protein is dryblended into a powdered base

nutritional as opposed to being introduced into one or more slurries that are subjected to a drying process to produce a powdered nutritional including the plant protein. The amount of plant protein dryblended into the powdered nutritional formulation may be at least 10 wt.%, including at least 25 wt.%, including at least 50 wt.%, including at least 75 wt.%, including at least 90 wt.%, and including 100 wt.% of the total amount of plant protein.

At least a portion of the plant protein present in the powdered nutritional formulations is spray-dried prior to being introduced (via dryblending or other) into the powdered nutritional formulation. Specifically, at least 50 wt.%, including at least 60 wt.%, including at least 70 wt.%, including at least 75 wt.%, including at least 80 wt.%, including at least 90 wt.%, including at least 95 wt.%, and including 100 wt.% of the plant protein present in the powdered nutritional formulations is a plant protein that has been spray-dried prior to being introduced (via dryblending or other) into the powdered nutritional formulation.

### **Macronutrients**

The powdered nutritional formulations comprise at least one of fat, protein, and carbohydrate, wherein at least a portion of the protein is a spray-dried plant protein. Generally, any source of fat, carbohydrate, and protein, in addition to the plant protein, that is known or otherwise suitable for use in nutritional products may also be suitable for use herein, provided that such macronutrients are also compatible with the essential elements of the powdered nutritional formulations as defined herein.

Although total concentrations or amounts of the fat, protein, and carbohydrates may vary depending upon the nutritional needs of the intended user, such concentrations or amounts most typically fall within one of the following embodied ranges, inclusive of any other essential fat, protein, and or carbohydrate ingredients as described herein.

Carbohydrate concentrations most typically range from about 5% to about 40%, including from about 7% to about 30%, including from about 10% to about 25%, by weight of the powdered nutritional formulation; fat concentrations most typically range from about 0.5% to about 20%, including from about 1% to about 10%, and also including from about 2% to about 5%, by weight of the powdered nutritional formulation; and protein concentrations most typically range from about 10% to about 90%, including from about 30% to about 85%, and also including from about 40% to about 85%, by weight of the powdered nutritional formulation.

Additional ranges for carbohydrates, fats, and proteins, based on % calories of the powdered nutritional formulation, are set forth in the following table.

| Nutrient (% Calories) | Embodiment A | Embodiment B | Embodiment C |
|-----------------------|--------------|--------------|--------------|
| Carbohydrate          | 1-98         | 10-75        | 30-50        |
| Fat                   | 1-98         | 20-70        | 35-40        |
| Protein               | 1-98         | 5-85         | 15-85        |

Non-limiting examples of suitable fats or sources thereof for use in the powdered nutritional formulations described herein include coconut oil, fractionated coconut oil, soy oil, corn oil, olive oil, safflower oil, high oleic safflower oil, MCT oil (medium chain triglycerides),  
 5 sunflower oil, high oleic sunflower oil, palm and palm kernel oils, palm olein, canola oil, marine oils, cottonseed oils, and combinations thereof.

Non-limiting examples of suitable carbohydrates or sources thereof for use in the powdered nutritional formulations described herein may include maltodextrin, hydrolyzed or  
 10 modified starch or cornstarch, glucose polymers, corn syrup, corn syrup solids, rice-derived carbohydrates, glucose, fructose, lactose, high fructose corn syrup, honey, sugar alcohols (*e.g.*, maltitol, erythritol, sorbitol), and combinations thereof.

Non-limiting examples of suitable protein or sources thereof, in addition to the plant proteins discussed above, for use in the powdered nutritional formulations include hydrolyzed,  
 15 partially hydrolyzed or non-hydrolyzed proteins or protein sources, which may be derived from any known or otherwise suitable source such as milk (*e.g.*, casein, whey), animal (*e.g.*, meat, fish), cereal (*e.g.*, rice, corn) or combinations thereof. Non-limiting examples of such proteins include milk protein isolates, milk protein concentrates as described herein, such as whey protein concentrates, casein protein isolates, whey protein, caseinates, whole cow's milk, partially or  
 20 completely defatted milk, soy protein isolates, soy protein concentrates, and so forth.

In one particular embodiment, the powdered nutritional formulation comprises a combination of a plant protein and a milk-based protein. In one exemplary embodiment, the milk-based protein is present in the powdered nutritional formulation in an amount of from about 10 wt.% to about 90 wt.%, including from about 20 wt.% to about 65 wt.%, including from about  
 25 30 wt.% to about 50 wt.%, and including from about 40 wt.% to about 45 wt.%.

### **Optional Ingredients**

The powdered nutritional formulations described herein may further comprise other optional ingredients that may modify the physical, chemical, hedonic or processing characteristics of the products or serve as pharmaceutical or additional nutritional components when used in the targeted population. Many such optional ingredients are known or otherwise suitable for use in other nutritional products and may also be used in the powdered nutritional formulations described herein, provided that such optional ingredients are safe and effective for oral administration and are compatible with the essential and other ingredients in the selected product form.

10 Non-limiting examples of such optional ingredients include preservatives, antioxidants, emulsifying agents, buffers, pharmaceutical actives, additional nutrients as described herein, colorants, flavors, thickening agents and stabilizers, and so forth.

The powdered nutritional formulations may further comprise vitamins or related nutrients, non-limiting examples of which include vitamin A, vitamin E, vitamin K, thiamine, 15 riboflavin, pyridoxine, vitamin B12, carotenoids, niacin, folic acid, pantothenic acid, biotin, vitamin C, choline, inositol, salts, and derivatives thereof, and combinations thereof.

The powdered nutritional formulations may further comprise minerals, non-limiting examples of which include phosphorus, magnesium, iron, zinc, manganese, copper, sodium, potassium, molybdenum, chromium, selenium, chloride, and combinations thereof.

20 The powdered nutritional formulations may also include one or more masking agents to reduce or otherwise obscure bitter flavors and after taste in the reconstituted powders. Suitable masking agents include natural and artificial sweeteners, sodium sources such as sodium chloride, and hydrocolloids, such as guar gum, xanthan gum, carrageenan, gellan gum, and combinations thereof. The amount of masking agent in the powdered nutritional formulation 25 may vary depending upon the particular masking agent selected, other ingredients in the formulation, and other formulation or product target variables. Such amounts, however, most typically range from at least about 0.1%, including from about 0.15% to about 3.0%, and also including from about 0.18% to about 2.5%, by weight of the powdered nutritional formulation.

### **Methods of Manufacture**

Nutritional base powders (into which at least a portion of the spray-dried plant protein is dryblended) may be prepared by dryblending all of the ingredients together to form a dryblended base powder into which at least a portion of the spray-dried plant protein is  
5 dryblended. Alternatively, the nutritional base powder (into which at least a portion of the spray-dried plant protein is dry-blended) may be prepared using conventional wet processes which generally include utilizing two or more slurries that are ultimately mixed together, treated, and dried.

At least a portion of the plant protein present in the dry-blended powdered nutritional  
10 formulation is plant protein that has been spray-dried prior to being dry-blended with the nutritional base powder. The remainder of the plant protein, if any, that is not spray-dried may be included in the nutritional base powder described above. In a preferred embodiment, 100% of the plant protein present in the powdered nutritional formulation is spray-dried by conventional methods prior to being dryblended or otherwise introduced into the nutritional base powder  
15 described above to form the dryblended powdered nutritional formulation.

In some embodiments, the plant protein may be high temperature short time (HTST) pasteurized prior to being spray-dried. Specifically, the plant protein may be added to water and allowed to hydrate until suspended; the water may or may not be heated. This protein-in-water slurry is then HTST processed prior to being spray-dried. Optionally, the plant protein may be  
20 conventionally homogenized after the HTST treatment and prior to the spray-drying. The spray-drying step is a conventional spray-drying step that is conducted at conventional well known temperatures and times to produce a spray-dried plant protein.

The manufacturing processes for the dryblended powdered nutritional formulations including spray-dried plant proteins may be carried out in ways other than those set forth herein  
25 without departing from the spirit and scope of the present disclosure. The present embodiments are, therefore, to be considered in all respects illustrative and not restrictive and that all changes and equivalents also come within the description of the present disclosure.

### **Methods of Use**

The dry-blended powdered nutritional formulations described herein and including spray-  
30 dried plant protein, when reconstituted, provide an improved mouthfeel over a reconstituted

liquid formed from a powder comprising a plant protein that has not been spray-dried. In addition, the dryblended powdered nutritional formulations as described herein provide a means for producing a reconstituted liquid including a plant protein that does not have a viscosity that increases over a short period of time to form a gel-like product.

5           An individual desirably consumes at least one serving of the reconstituted powdered nutritional formulation daily, and in some embodiments, may consume two, three, or even more servings per day. Each serving is desirably administered as a single undivided dose, although the serving may also be divided into two or more partial or divided servings to be taken at two or more times during the day. The methods of the present disclosure include continuous day after  
10   day administration, as well as periodic or limited administration, although continuous day after day administration is generally desirable. The dryblended powdered nutritional formulations may be reconstituted for use in infants, children, and adults.

### **EXAMPLES**

15           The following examples illustrate specific embodiments and/or features of the dryblended powdered nutritional formulations including spray-dried plant proteins. The examples are given solely for the purpose of illustration and are not to be construed as limitations of the present disclosure, as many variations thereof are possible without departing from the spirit and scope of the disclosure. All exemplified amounts are weight percentages based upon the total weight of the composition, unless otherwise specified.

20           The exemplified compositions are dryblended powdered nutritional formulations prepared in accordance with the manufacturing methods described herein, such that each exemplified powdered nutritional formulation has improved mouthfeel and improved viscosity characteristics upon being reconstituted with water due to the inclusion of a plant protein that has been subjected to a spray-drying process during manufacturing.

#### **Examples 1-5**

25           Examples 1-5 illustrate dry-blended powdered nutritional formulations of the present disclosure, the ingredients of which are listed in the table below. All ingredient amounts are listed as the weight percent of the total powdered nutritional formulation, unless otherwise specified. For each Example, at least a portion of the spray-dried pea protein isolate has been  
30   dryblended into the nutritional base powder.

| Ingredient                        | Example 1 | Example 2 | Example 3 | Example 4 | Example 5 |
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|
| Whey Protein Concentrate          | 42.5%     | 42.5%     | 42.5%     | 42.5%     | 63.68%    |
| Pea Protein Isolate (spray-dried) | 42.00%    | 42.00%    | 42.00%    | 42.00%    | 21.13%    |
| Maltodextrin                      | 12.72%    | 12.40%    | 13.11%    | 12.52%    | 12.42%    |
| Flavor                            | 3.36%     | 1.50 %    | 1.20%     | 1.68%     | 1.68%     |
| Evaporated Milk                   | 0.00%     | 0.50%     | 0.00%     | 0.00%     | 0.00%     |
| Carrageenan                       | 0.20%     | 0.20%     | 0.20%     | 0.30%     | 0.20%     |
| Xanthan Gum                       | 0.20%     | 0.20%     | 0.20%     | 0.30%     | 0.20%     |
| Acesulfame K                      | 0.13%     | 0.13%     | 0.13%     | 0.13%     | 0.13%     |
| Sucralose                         | 0.07%     | 0.07%     | 0.07%     | 0.07%     | 0.07%     |
| Flour Salt                        | 0.50%     | 0.50%     | 0.50%     | 0.50%     | 0.50%     |

### **Examples 6-10**

Examples 6-10 illustrate dry-blended powdered nutritional formulations of the present disclosure, the ingredients of which are listed in the table below. All ingredient amounts are listed as the weight percent of the total powdered nutritional formulation, unless otherwise specified. For each Example, at least a portion of the spray-dried pea protein isolate has been dryblended into the nutritional base powder.

| Ingredient                        | Example 6 | Example 7 | Example 8 | Example 9 | Example 10 |
|-----------------------------------|-----------|-----------|-----------|-----------|------------|
| Whey Protein Concentrate          | 41.500 %  | 41.500%   | 41.500%   | 41.500%   | 63.68%     |
| Pea Protein Isolate (spray-dried) | 41.00%    | 41.00%    | 41.00%    | 41.00%    | 21.13%     |
| Maltodextrin                      | 7.568%    | 8.418%    | 7.848%    | 17.768%   | 5.263%     |
| Cocoa                             | 7.000%    | 7.000%    | 7.000%    | 7.000%    | 7.000%     |
| Flavor                            | 1.57%     | 0.72%     | 1.29%     | 1.57%     | 1.57%      |
| Carrageenan                       | 0.30%     | 0.30%     | 0.30%     | 0.20%     | 0.30%      |
| Xanthan Gum                       | 0.30%     | 0.30%     | 0.30%     | 0.20%     | 0.30%      |
| Acesulfame K                      | 0.140%    | 0.140%    | 0.140%    | 0.140%    | 0.140%     |
| Sucralose                         | 0.0716%   | 0.0716%   | 0.0716%   | 0.0716%   | 0.0716%    |
| Flour Salt                        | 0.550%    | 0.550%    | 0.550%    | 0.550%    | 0.550%     |

### **Example 11**

In this example, two identical samples of commercially available pea protein are subjected to two different spray-drying processes and the resulting spray-dried pea proteins are then mixed with whey protein, reconstituted, and evaluated for mouthfeel and color. A control

sample of identical commercially available pea protein not subjected to a spray-drying process is utilized as a control.

Commercially available pea protein (Roquette NUTRALYS® S85F) is added to water at about 10 wt.% total solids and allowed to hydrate until suspended. This protein-in-water (PIW) slurry is then split into two batches with the first batch (Sample 1) being spray-dried without further treatment (Cyclone configuration, nozzle size of 0.018, swirl chamber 4, and pressure of about 2500 psi). The second batch (Sample 2) is high temperature short time (HTST) processed with a 16 second hold at a temperature of 165-185°F and homogenized at a pressure of 3000-5000 psig prior to being sent to the spray-drier under identical conditions to Sample 1.

No issues are encountered during the process of drying. About 24 pounds of powder are collected (about 12 pounds from each batch). The control and Sample 1 and Sample 2 are separately dryblended with instantized whey protein, at a 50:50 weight ratio and evaluated for mouthfeel improvement. A significant color and mouthfeel is seen in both Sample 1 and Sample 2 as compared to the control. Both Sample 1 and Sample 2 had virtually no gritty or slimy mouthfeel and had good light color. The control had a substantial gritty mouthfeel along with a slimy mouthfeel.

## WHAT IS CLAIMED IS:

1. A powdered nutritional formulation comprising a dryblended plant protein, wherein at least a portion of the dryblended plant protein is spray-dried plant protein.
2. The powdered nutritional formulation of Claim 1 wherein the dryblended plant  
5 protein comprises up to 100 wt.% of the total protein present in the nutritional formulation.
3. The powdered nutritional formulation of Claim 1 wherein the dryblended plant protein comprises up about 50 wt.% by weight of the total protein present in the nutritional formulation.
4. The powdered nutritional formulation of Claim 1 wherein at least 50 wt.% of the  
10 plant protein present in the powdered nutritional formulation is spray-dried plant protein.
5. The powdered nutritional formulation of Claim 1 wherein at least 75% of the plant protein present in the powdered nutritional formulation is spray-dried plant protein.
6. The powdered nutritional formulation of Claim 1 wherein 100% of the plant protein present in the powdered nutritional formulation is spray-dried plant protein.
7. The powdered nutritional formulation of Claim 1 wherein the plant protein is  
15 selected from the group consisting of pea protein, soy protein, and combinations thereof.
8. The powdered nutritional formulation of Claim 7 wherein the plant protein is pea protein.
9. The powdered nutritional formulation of Claim 1 further comprising at least one  
20 milk protein.
10. The powdered nutritional formulation of Claim 1 wherein the plant protein has been high temperature short time pasteurized prior to being spray-dried.
11. The powdered nutritional formulation of Claim 10 wherein the plant protein has been high temperature short time pasteurized at a temperature of from about 165°F to about  
25 185°F for a time period of from about 12 seconds to about 20 seconds.

12. The powdered nutritional formulation of Claim 10 wherein the plant protein has been homogenized after being high temperature short time pasteurized and prior to being spray-dried.

13. The powdered nutritional formulation of Claim 1 wherein the plant protein  
5 comprises from about 40 wt.% to about 45 wt.% of the powdered nutritional formulation.

14. A powdered nutritional formulation comprising at least one milk protein and at least one spray-dried plant protein, wherein the spray-dried plant protein comprises up to about 50 wt.% of the total protein in the powdered nutritional formulation.

15. The powdered nutritional formulation of Claim 14 wherein the powdered  
10 nutritional formulation includes dryblended spray-dried plant protein.

16. The powdered nutritional formulation of Claim 14 wherein the plant protein is selected from the group consisting of pea protein, soy protein, and combinations thereof.

17. The powdered nutritional formulation of Claim 16 wherein the plant protein is pea protein.

18. The powdered nutritional formulation of Claim 14 wherein the plant protein has  
15 been high temperature short time pasteurized prior to being spray-dried.

19. The powdered nutritional formulation of Claim 18 wherein the plant protein has been high temperature short time pasteurized at a temperature of from about 165°F to about 185°F for a time period of from about 12 seconds to about 20 seconds.

20. The powdered nutritional formulation of Claim 18 wherein the plant protein has  
20 been homogenized after being high temperature short time pasteurized and prior to being spray-dried.

21. The powdered nutritional formulation of Claim 14 wherein the plant protein comprises from about 40 wt.% to about 45 wt.% of the nutritional formulation.

22. A method of preparing a dryblended powdered nutritional formulation including a  
25 spray-dried plant protein, the method comprising:

preparing a base powder including at least one of a fat, carbohydrate, and protein; and

dry-blending into the base powder a spray-dried plant protein.

23. The method of Claim 22 wherein the plant protein is selected from the group consisting of pea protein, soy protein, and combinations thereof.

24. The method of Claim 23 wherein the plant protein is pea protein.

5 25. The method of Claim 22 wherein the plant protein is high temperature short time pasteurized and spray-dried prior to being dryblended into the base powder.

26. The method of Claim 25 wherein the plant protein is high temperature short time pasteurized at a temperature of from about 165°F to about 185°F for a time period of from about 12 seconds to about 20 seconds.

10 27. The method of Claim 25 wherein the plant protein is homogenized after being high temperature short time pasteurized and prior to being spray-dried.