

TABLE 2

Serum and Viscosity after 3 months storage at 72° F.						
Code	Starch	Use Level	Guar Gum	Use Level	Serum (mL/340 mls)	Viscosity Cp*
1363-79A	Melojel	1.6%	Guar	0.117	150	47
1363-80C	Eurylon 7	1.1%	Guar	0.117	5	44
1363-109B	Hylon VII	1.1%	Guar	0.117	5	43
1363-79C	Melojel	1.6%	Xanthan	0.117	165	55
1363-87C	Eurylon 7	1.1%	Xanthan	0.117	5	55
1363-71B	Melojel	1.6%	Guar/ Xanthan	0.0525/ 0.0525	70	55
1363-71C	Eurylon 7	1.1%	Guar/ Xanthan	0.0525/ 0.0525	0	72
1363-79B	Melojel	1.6%	None	0	20	17
1363-80A	Eurylon 7	1.1%	None	0	5	12
1363-72C	Melojel	1.6%	Guar + Carrageenan	0.117	0	52
1363-87B	Melojel	1.6%	Carrageenan only	0	20	19

\*Viscosity measured using Brookfield LV-DV-1 Viscometer with spindle #1 at 60 rpm; Product temperature @ 70° F.

Storage at different temperatures, i.e., 40° F. and 100° F., indicates that Eurylon 7 starch is more stable and does not develop serum at all the tested storage conditions as does Melojel starch. The Melojel starch/guar gum/carrageenan variable which is stable at ambient temperature for 3 months had some serum separation at 40° F., however it is significantly less than without the added carrageenan (50 mls vs 150 mls). The viscosity of the Eurylon 7 does not change significantly during storage at both 72° F. and 100° F. conditions (See FIG. 2). The Eurylon 7 variables also exhibited less viscosity change at 100° F. than the Melojel Starch.

Conclusions:

The stability studies after 3 months indicate that in Peptamen®, high amylose starch such as Eurylon 7 and Hylon 7 (National Starch Co.) are more compatible with guar and xanthan gums than is Melojel starch. Adding carrageenan (iota/kappa blend) to the system containing Melojel starch and guar gum is also effective in reducing serum development.

Removing the guar gum from the formula does result in significantly reduced serum, however resulted in sedimentation of the insoluble salts due the low viscosity of the product.

It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without diminishing its attended advantages. It is therefore intended that such changes and modifications be covered by the appended claims.

We claim:

1. A nutritional product comprising:

- a protein source;
- a lipid source;
- a carbohydrate source including high amylose starch and guar gum, wherein high amylose starch and guar gum as a total comprise approximately 2.25% to about 7.50% of the total caloric content.

2. A nutritional product comprising:

- a protein source;
- a lipid source; and
- a carbohydrate source including high amylose starch and guar gum, the high amylose starch comprises approximately 2.0% to about 6.5% of the total caloric content.

3. A nutritional product comprising:

- a protein source;
- a lipid source; and
- a carbohydrate source including high amylose starch and guar gum, the guar gum comprises 0.25% to about 1.0% of the total caloric content.

4. A nutritional product comprising:

- a protein source;
- a lipid source; and
- a carbohydrate source including high amylose starch and guar gum, the high amylose starch comprises at least approximately 50% by weight amylose.

5. A nutritional product comprising:

- a protein source;
- a lipid source; and
- a carbohydrate source including high amylose starch and guar gum, the weight ratio of high amylose starch to guar gum is approximately 2.5:1 to 16:1.

6. The nutritional product of claim 1 including carrageenan.

7. The nutritional product of claim 1 wherein the carbohydrate source comprises approximately 40 to about 60% of the caloric content.

8. The nutritional product of claim 1 wherein the product is designed to be an enteral product.

9. The nutritional product of claim 1 including xanthan.

10. A nutritional product of comprising:

- a hydrolyzed whey protein source;
- a source of lipids;
- a sufficient amount of a stabilizer to reduce serum separation, the stabilizer including high amylose starch and guar gum, wherein high amylose starch and guar gum as a total comprise approximately 2.25% to about 7.5% of the total caloric content.

11. A nutritional product comprising:

- a hydrolyzed whey protein source;
- a source of lipids; and
- a sufficient amount of a stabilizer to reduce serum separation, the stabilizer including high amylose starch and guar gum, the high amylose starch comprises approximately 2.0% to about 6.5% of the total caloric content.

12. A nutritional product comprising:

- a hydrolyzed whey protein source;
- a source of lipids; and
- a sufficient amount of a stabilizer to reduce serum separation, the stabilizer including high amylose starch and guar gum, the guar gum comprises 0.25% to about 1.0% of the total caloric content.

13. A nutritional product comprising:

- a hydrolyzed whey protein source;
- a source of lipids; and
- a sufficient amount of a stabilizer to reduce serum separation, the stabilizer including high amylose starch and guar gum, the weight ratio of high amylose starch to guar gum is approximately 2.5:1 to 16:1.