Guidelines for the Use of Lanaflex™ in the Dietary Management of Phenylketonuria
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Disclaimer:
Lanaflex is a medical food intended for use in dietary management of certain Phenylketonuria (PKU) patients ages 12 and over. The following guidelines are provided to help support healthcare professionals involved in the dietary management of PKU patients. Practices may vary from clinic to clinic, and this booklet should serve as guidance, not as strict protocol.

Acknowledgements:
Nutricia North America would like to thank Kathryn Moseley, MS, RD, University of Southern California, for her input and review of these guidelines, and Sommer Gaughan, RD, CSP, The Children’s Hospital Colorado, for her contributions to the sample menus.
Guidelines for the Use of Lanaflex in the Dietary Management of Phenylketonuria

INTRODUCTION AND BACKGROUND

INTRODUCTION

In the dietary management of Phenylketonuria (PKU), early institution and maintenance of a strict low phenylalanine (PHE) diet has been shown to be essential to optimize outcome and avoid the potential consequences of poor metabolic control e.g. low IQ and behavioral problems. Protein-rich foods must be virtually eliminated from the diet and a PHE-free medical food must be given to compensate for the resulting deficiencies in the other essential and non-essential amino acids.

It is generally accepted that even early-treated PKU adults who have relaxed their diet may be exposing themselves to developing neurological impairments, which may have a negative impact on quality of life. Short attention span, poor short-term memory, impaired visual-motor perception, and defective motor coordination are among the symptoms that may result when plasma PHE concentrations remain elevated.

The report of the Medical Research Council Working Party on PKU1 as well as the NIH Consensus Statement on PKU2 recommended continuation of dietary management beyond childhood, preferably for life. However, compliance with the PHE-free medical food is not optimal and Princé et al. have reported that less medical food is taken than the amount actually prescribed3. Many individuals with PKU relax dietary control as they get older3-5, or they no longer come to clinic3, forming a so-called ‘off-diet’ population in which PHE concentrations are high and nutritional status may be compromised. Individuals often self-restrict high biologic value protein when they come off diet, which can lead to a diet low in essential amino acids and micronutrients, including vitamin B127,8.

There is increasing evidence that high PHE concentrations and/or low brain concentrations of certain other amino acids specifically tyrosine (TYR) and tryptophan (TRP) may have negative effects on executive functioning in adult PKU individuals9,10. In ten Hoedt et al. recently reported on high PHE concentrations directly affecting mood and sustained attention in PKU adults11 (See Figure 1).

BACKGROUND AND RATIONALE

Entry of plasma PHE into the brain

Large Neutral Amino Acids (LNAAs) enter the brain via a specific transporter protein (LAT 1) at the blood-brain barrier (BBB). The transporter is saturated at physiological concentrations of LNAAs, so transport is effective in competition with other amino acids, including PHE7,12.

Brain LNAAs transport in PKU is severely affected because PHE can present at very high concentrations in plasma and PHE coincidentally has the highest affinity of any of the LNAAs13 for the LAT 1 transporter. The overall effect is that brain PHE concentrations are very high in PKU, and entry of other LNAAs is drastically reduced, e.g. TYR and TRP. TYR and TRP are the direct metabolic precursors of the neurotransmitters, dopamine and serotonin, respectively. The neurotoxicity associated with PKU is thought to be a combination of the direct toxicity associated with higher than normal brain PHE concentrations and deficits in concentrations of serotonin and dopamine, due to low brain concentrations of the TYR and TRP precursors14. The maximum potential for neurotoxicity will occur when plasma PHE concentrations are at their highest, e.g. in off-diet or non-compliant PKU patients.

Guidelines for the Use of Lanaflex in the Dietary Management of Phenylketonuria

Evidence is increasing that the goal of PKU treatment might be to normalize cerebral concentrations of large neutral amino acids instead of preventing high brain PHE concentrations alone\textsuperscript{16,17}.

Lanaflex is designed to help normalize these imbalances by supplying essential amino acids along with significant amounts of TYR and TRP. The product offers the potential to help improve some of the negative effects that high PHE and low LNAA concentrations may have on neurological outcome. Lanaflex contains the full range of essential amino acids, including LNAAas (minus PHE). Increasing the dietary intake of LNAAas will result in higher plasma concentrations of these amino acids, which can then directly compete with plasma PHE at the BBB. Consequently, brain PHE concentrations should be reduced while concentrations of the other essential amino acids, such as TYR and TRP, will be increased.

The benefit of LNAAas is as follows: one is that reduced brain PHE concentrations will mute the negative effect that high brain PHE has on the enzymes that convert TYR and TRP to dopamine and serotonin, respectively. Secondly, higher brain concentrations of TYR and TRP will support production of dopamine and serotonin. Thirdly, a concomitant reduction in brain PHE and increase in TYR and TRP may improve neuropsychologic function\textsuperscript{18}.

Supplementation of LNAAas (TYR, TYR, MET, LEU, ILE, VAL, HIS and THR) to reduce PHE uptake into the brain in PKU in order to reduce the neurological symptoms associated with PKU was first suggested in the 1970s\textsuperscript{19}. Those LNAAas with relatively lower concentrations are supplemented in the product (see Appendix 3).

*Note: Tyrosine is a conditionally essential amino acid in patients with PKU.*

**Absorption of dietary PHE from the gut lumen**

Dietary LNAAas are competitively absorbed from the gut via a specific transporter protein, similar but not identical to that found at the BBB. Another approach to address high plasma PHE concentrations would be to reduce dietary PHE absorption from the gut. Non-PHE LNAAas in the gut lumen at high enough concentrations after meals may reduce PHE absorption.

As demonstrated above, Lanaflex may therefore address PHE metabolism in off-diet patients with PKU in two ways – reducing absorption of dietary PHE and therefore plasma PHE concentrations; and restricting the high concentrations of plasma PHE in the brain\textsuperscript{12}.

**Effect of LNAA on neurophysiological status and behavior**

Schindeler et al.\textsuperscript{12} reported that LNAA supplementation had a positive effect on executive functioning, specifically verbal generativity, cognitive flexibility and non-verbal self-monitoring and working memory. In a separate pilot study, Kalkanou\textsuperscript{20} et al. evaluated the effect of PHE-free essential amino acids tablets (enriched with TYR and TRP) on the behavior of intellectually impaired PKU patients and observed significant improvements in concentration\textsuperscript{12}.

These findings indicate that LNAA may play a role in improving behavioral and intellectual outcome of PKU patients through increasing the availability of TYR and TRP in the brain.


HOW TO INCORPORATE LANAFLEX INTO A PKU DIET

Please note:
The following are suggested parameters for monitoring; please also refer to your clinic guidelines.

- Dietary intake, including total protein, amino acids and energy
- Plasma amino acids (refer to your clinic lab for reference ranges)
- Monitor PHE and TYR and aim for a low ratio. Sharman et al (2010) advocate a lifetime PHE/TYR ratio of less than 621
- Serum vitamin B12 and homocysteine
- Behavior markers: general well-being, mood, energy level, concentration etc.

The aim of incorporating Lanaflex into the PKU diet is to help normalize plasma amino acid levels in patients who are not following a PHE-restricted diet or who are struggling.

Mixing Lanaflex:
Lanaflex is designed to be consumed as a small, chilled drink with meals. To reconstitute Lanaflex, add one stick pack to 60 mL (approx. 2 fl oz) of chilled water and shake. Lanaflex can be taken in a more concentrated form i.e. paste, but the individual would need to consume extra water or drink with it to prevent an osmotic effect.

Lanaflex should be distributed over the day in three or more portions and consumed in conjunction with a protein-containing meal.

Dosage:
Lanaflex is available in 15.8 g stick packs, each pack contains 5.2 g PE.

The recommended starting dosage of Lanaflex is 0.8 g Lanaflex powder/kg bodyweight per day. For most individuals this dose calculates to 2-4 packs of Lanaflex per day. As noted above, Lanaflex should be distributed over the course of the day in conjunction with a protein-containing meal.

CALCULATING A DIET WITH LANAFLEX

Lanaflex is designed to work in combination with a “relaxed” low-PHE diet, whereas 70-80% of the individual’s protein requirement will come from natural/normal foods and 20-30% from Lanaflex. However, many individuals combine Lanaflex with traditional PKU medical food.

Protein requirement is calculated based on ideal body weight. The following table provides guidance based on 80/20 and 70/30 diet approaches.

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Protein per day (g)</th>
<th>Protein from food (80%)</th>
<th>Protein from Lanaflex (20%)</th>
<th>Total protein from food</th>
<th>Suggested number of Lanaflex packets per day</th>
<th>Suggested number of Lanaflex packets per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1</td>
<td>50</td>
<td>40</td>
<td>10</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
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<td>1</td>
<td>55</td>
<td>44</td>
<td>11</td>
<td>2</td>
<td>39</td>
</tr>
<tr>
<td>60</td>
<td>1</td>
<td>60</td>
<td>48</td>
<td>12</td>
<td>3</td>
<td>42</td>
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<td>1</td>
<td>65</td>
<td>52</td>
<td>13</td>
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<td>45</td>
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<tr>
<td>70</td>
<td>1</td>
<td>70</td>
<td>56</td>
<td>14</td>
<td>3</td>
<td>49</td>
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<tr>
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<td>1</td>
<td>75</td>
<td>60</td>
<td>15</td>
<td>3</td>
<td>53</td>
</tr>
<tr>
<td>80</td>
<td>1</td>
<td>80</td>
<td>64</td>
<td>16</td>
<td>3</td>
<td>56</td>
</tr>
</tbody>
</table>

Calculating Daily Protein Needs From Lanaflex And Natural Food

**Step 1:** Determine total daily protein requirement based on ideal body weight. Recommended daily protein intake for an adult is 0.8 – 1 g protein/kg ideal body weight. Refer to table 1 for guidance.

*Example:* Establish and fill daily prescription for 27 yo male, 70 kg ideal body weight

70 kg x 1 g = 70 g total protein

**Step 2:** Determine amount of Lanaflex per day. Provide 20-30% of total protein from Lanaflex. One pack Lanaflex provides 5.2 g protein equivalent. Energy contribution from Lanaflex is minimal.

*Example:*

70 g total protein x 20% = 14 g PE from Lanaflex.

14 g Lanaflex = ~ 3 packs

**Step 3:** Determine protein from normal foods. The remainder (70-80%) of protein requirement will come from natural foods.

*Example:*

70 g total protein – 14 g protein from Lanaflex = 56 g

Introduction of Lanaflex Into the Diet

Introduce Lanaflex gradually into the diet. As always, consider patient preferences.

**Phase 1:**

- Start with ½ pack per meal for one week, then increase to 1 pack per meal.
- Counsel on healthy food choices and cutting back high protein foods.

**Phase 2:**

- After one week, increase to 1 pack Lanaflex per meal.
- Monitor blood PHE and obtain diet record.
- Counsel on food choices.

**Phase 3:**

- After two weeks, monitor plasma AA profile and general well-being.
- Monitor plasma AA profile and general well-being.

**Approach A (Lanaflex alone):**

Use this nutrition management approach for individuals who

- Are not using any traditional PKU medical food,
- Are not on any form of PHE-restricted diet, e.g. “Off diet” individuals, late diagnosed/never treated, or
- Either have not or only partially responded to BH₄ drug therapy and are not currently on any traditional PKU medical food.

**Plasma AA within reference range**

- Continue with current prescription and monitor overall well-being, PHE, and all other parameters depending on clinic guidelines.

**Plasma AA NOT within reference range**

- Consider introducing one more pack Lanaflex or 10-20 g protein from traditional PKU medical food if plasma AAs are not within reference range.

AFTER 1 WEEK

AFTER 2 WEEKS

**Phase 2**

- Introduce 1/2 pack Lanaflex per meal. Counsel on healthy food choices and cutting back on high protein foods.
- Increase to 1 pack Lanaflex per meal.
- Monitor blood PHE and obtain diet record. Counsel on food choices.
- Monitor plasma AA profile and general well-being.

**Phase 3**

- Plasma AA within reference range
- Plasma AA NOT within reference range

**Phase 2**

- PHASE 1
  - Introduce 1/2 pack Lanaflex per meal. Counsel on healthy food choices and cutting back on high protein foods.
  - PHASE 2
    - Increase to 1 pack Lanaflex per meal.
    - Monitor blood PHE and obtain diet record. Counsel on food choices.
    - PHASE 3
      - Monitor plasma AA profile and general well-being.
**APPRAOCH B (Lanaflex with traditional PKU Medical Food):**

Use this nutrition management approach for individuals who are on some form of a traditional PKU diet, but not compliant, and who

- Are struggling to achieve optimal blood PHE control,
- Want to reduce traditional PKU medical food intake, or
- Want to add more normal food choices to their diet

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**Introduction of Lanaflex Into the Diet**

Refer to established diet prescription for patient and consider patient's preferences.

Introduce Lanaflex gradually into the diet.

**Phase 1:** Add ½ pack of Lanaflex at 2-3 meals to the current diet prescription without changing prescription for protein from natural sources or PKU medical food. Increase to 1 pack of Lanaflex at 2-3 meals within about one week.

**Phase 2:** After 1-2 weeks and if patient is feeling well, consider cutting back on 10 g protein from traditional PKU medical food prescription at 2-3 meals OR allow for more natural protein.

**Phase 3:** After two weeks, monitor blood PHE, obtain diet record and possibly plasma AA profile. Monitor overall well-being. If plasma AAs are outside reference range and/or patient reports behavioral issues, consider introducing one more pack Lanaflex or 10-20 g protein from traditional PKU formula.
RESPONSE TO THERAPY AND MONITORING

Depending on individual circumstances, patients may respond with stabilized or reduced blood PHE concentrations, lower PHE/TYR ratio, and/or report feeling better. Plasma amino acids should be within reference range.

Please also see comments on behavioral assessment below.

Monitoring

It is imperative that individuals who consume Lanaflex continue to be supervised by clinicians and be carefully monitored.

We recommend, as a general guide, that the following be obtained before an individual starts on Lanaflex and while consuming the product:

- Routine blood biochemistry including plasma PHE, other amino acid concentrations and prealbumin.
- Consider paying close attention to the PHE/TYR ratio. Research suggests that a low lifetime ratio may be more important than blood PHE alone when assessing executive functioning. Sharman et al (2010) advocate a lifetime PHE/TYR ratio of less than 6.
- Nutritional assessment including dietary intake, especially total protein, body weight, BMI etc.
- Behavioral assessment

The frequency of monitoring will depend on the metabolic center and their specific protocol for managing the ‘relaxed’ or less restricted diet. Additional assessments might be required depending on each center’s guidelines for treatment and management.

Genetic Metabolic Dietitians International (GMDI) offers MetabolicPro, the only web-based nutrient analysis software program designed for use by metabolic dietitians. All foods in the database contain complete amino acid data, making it the valuable tool for analyzing diets of patients with amino acid and organic acid disorders. More information can be found at www.gmdi.org.

Behavioral assessment:

Several healthcare professionals advocate now or report using behavioral assessment tools for monitoring metabolic patients. Hence, blood PHE concentrations may no longer be the only measurement for therapy success and evaluation. A group of ten psychologists and one psychiatrist in the United States with expertise in neuropsychological assessment and PKU proposed a Uniform Assessment Method for PKU. Resources, specially designed for the general practitioner, can be found on http://gmpsych.org.

Another valuable resource for assessment tests can be found at www.pearsonassessments.com.
### Sample Menu 1

<table>
<thead>
<tr>
<th>Diet prescription for an adult, 55 kg</th>
<th>Nutrient Analysis*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein, total 56 g</td>
<td>Protein, total 56.2 g</td>
</tr>
<tr>
<td>From natural food 40 g</td>
<td>From natural food 40.6 g</td>
</tr>
<tr>
<td>From Lanaflex 15.6 g</td>
<td>From Lanaflex 15.2 g</td>
</tr>
<tr>
<td>Energy 1500 kcal</td>
<td>PHE 1814 mg</td>
</tr>
<tr>
<td></td>
<td>Fat 21.7 g</td>
</tr>
<tr>
<td></td>
<td>Carbohydrate 286 g</td>
</tr>
<tr>
<td></td>
<td>Energy 1517 kcal</td>
</tr>
</tbody>
</table>

**Breakfast:**
- 1 cup Cornflakes
- ½ cup 1% Milk
- ½ cup Fresh Blueberries
- 2 slices 100% Whole Wheat bread
- 1 tbsp Strawberry Preserves
- 1 pack Lanaflex

**Snack:**
- ½ cup Low Fat Yogurt
- 1 medium Banana

**Lunch:**
- Vegetable Sandwich
  - ½ Whole Wheat Pita
  - 2 tbsp Hummus
  - 4 slices Cucumber
  - 2 slices Tomato
  - 1 leaf Romaine Lettuce
- 1 oz Hard Pretzels
- 1 medium Apple
- 1 pack Lanaflex

**Dinner:**
- Vegetable Stir-Fry
  - 1 cup Brown Rice, cooked
  - ½ cup Mixed Vegetables
  - ¼ cup Mushrooms, cooked
  - 1 tbsp Peanuts, chopped
- Mixed Salad
  - 1 cup Spinach
  - 3 Cherry Tomatoes
  - 2 tbsp Carrots, grated
  - 1 tbsp Italian Salad Dressing
  - 1 Pack Lanaflex

**Sample Menu 2**

<table>
<thead>
<tr>
<th>Diet prescription for an adult, 60 kg</th>
<th>Nutrient Analysis*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein, total 65 g</td>
<td>Protein, total 66.8 g</td>
</tr>
<tr>
<td>From natural food 50 g</td>
<td>From natural food 50.2 g</td>
</tr>
<tr>
<td>From Lanaflex 15.6 g</td>
<td>From Lanaflex 15.6 g</td>
</tr>
<tr>
<td>Energy 1750 kcal</td>
<td>PHE 2349 mg</td>
</tr>
<tr>
<td></td>
<td>Fat 42.5 g</td>
</tr>
<tr>
<td></td>
<td>Carbohydrate 278 g</td>
</tr>
<tr>
<td></td>
<td>Energy 1720 kcal</td>
</tr>
</tbody>
</table>

**Breakfast:**
- 1 cup Oatmeal, plain cooked w/water
- 2 tbsp Dried Cranberries
- 1 tbsp Sliced Almonds
- 1 tbsp Honey
- ½ cup 1% Milk
- 1 pack of Lanaflex

**Snack:**
- 1 medium Apple
- 1 tbsp Natural Peanut Butter

**Lunch:**
- Vegetable Wrap
  - Whole Wheat Tortilla
  - 1 slice Provolone Cheese
  - 4 slices Cucumber
  - 2 slices Tomato
  - ½ cup Portabella Mushrooms, grilled
  - 1 leaf Romaine Lettuce
- 1 oz Hard Pretzels
- 1 pack of Lanaflex

**Dinner:**
- Loaded Potato
  - 1 large Baked Potato, w/skin
  - ½ cup Broccoli, steamed
  - 2 tbsp Cheddar, shredded
  - 1 tbsp Sour Cream, light
- Mixed Salad
  - 1 cup Spinach
  - 3 Cherry Tomatoes
  - 2 tbsp Carrots, grated
  - 1 tsp Italian Salad Dressing
  - 1 Pack Lanaflex

If more calories are needed, add non-protein products such as oils, honey and jam.
Sample Menu 3

Diet prescription for an adult, 75 kg

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Nutrient Analysis*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 cups Cornflakes</td>
<td>Protein, total 76.4 g</td>
</tr>
<tr>
<td>6 oz 1% Milk</td>
<td>From natural food 60.8 g</td>
</tr>
<tr>
<td>1 medium Banana</td>
<td>From Lanaflex 15.6 g</td>
</tr>
<tr>
<td>1 packet Lanaflex</td>
<td>PHE 2860 mg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy</th>
<th>Carbohydrate</th>
<th>Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100 kcal</td>
<td>381 g</td>
<td>40.4 g</td>
</tr>
</tbody>
</table>

Snack:
<table>
<thead>
<tr>
<th>Snack</th>
<th>6 oz Low-Fat Yogurt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 medium Banana</td>
<td>2 Tbsp Almonds, sliced</td>
</tr>
</tbody>
</table>

Lunch:
<table>
<thead>
<tr>
<th>Lunch</th>
<th>2 oz Pretzels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey Sandwich:</td>
<td>1 packet Lanaflex</td>
</tr>
<tr>
<td>2 oz Deli Turkey</td>
<td>2 Tbsp Almonds, sliced</td>
</tr>
<tr>
<td>1 Large Whole Wheat Pita</td>
<td></td>
</tr>
<tr>
<td>4 slices cucumber</td>
<td></td>
</tr>
<tr>
<td>1 Leaf Romaine lettuce</td>
<td></td>
</tr>
<tr>
<td>2 Slices Tomato</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dinner</th>
<th>1 Whole Wheat Dinner Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ¼ cup Whole Wheat pasta</td>
<td>2 Tbsp Butter</td>
</tr>
<tr>
<td>½ cup Marinara Sauce</td>
<td>1 packet Lanaflex</td>
</tr>
<tr>
<td>Sautéed Vegetables</td>
<td></td>
</tr>
<tr>
<td>1 cup Sliced Zucchini and Squash</td>
<td></td>
</tr>
<tr>
<td>½ Tbsp Olive oil</td>
<td></td>
</tr>
</tbody>
</table>

If more calories are needed, add non-protein products such as oils, honey and jam.

Resources:
Eat Right Stay Bright is an anticipatory guidance tool, developed by The Children's Hospital of Denver, to aid healthcare professionals in the treatment of patients with PKU. Visit nutritialearningcenter.com to download the guide.

Appendix 3
Lanaflex Nutrition and Ingredients Information:

<table>
<thead>
<tr>
<th>Ingredients:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar, Calcium Phosphate, Artificial Flavors, L-Histidine, L-Tryptophan, L-Tyrosine, Tricalcium Phosphate, Magnesium Acetate, L-Lysine, N-Acetyl-L-Methionine, L-Leucine, L-Methionine, L-Threonine, L-Valine, L-Isoleucine, Choline Bitartrate, Guar Gum, Soy Lecithin, Citric Acid, L-Ascorbic Acid, M-Isosalt, Ferric Sulfate, Artificial Sweetener (Aspartame K), DL-Alpha-Tocopherol Acetate, Zinc Sulfate, Nicotinamide, Manganese Sulfate, Calcium-D-Pantothenate, Cupric Sulfate, Pyridoxine Hydrochloride, Riboflavin, Vitamin A Acetate, Folic Acid, Artificial Color (Beta Carotene), Potassium Iodide, Chromium Chloride, Sodium Selenite, Sodium Molybdate, Phytic Acid, D-Biotin, Cholecalciferol, Cyanocobalamin.</td>
</tr>
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</table>

Nutrition Information:

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>Per Sachet (15.8 g)</th>
<th>Per 100 g</th>
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<tbody>
<tr>
<td>Protein Equivalent</td>
<td>5.2</td>
<td>33</td>
</tr>
<tr>
<td>Fat</td>
<td>0.16</td>
<td>1</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>4.4</td>
<td>29</td>
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<table>
<thead>
<tr>
<th>Amino Acids, g</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Histidine</td>
</tr>
<tr>
<td>L-Isoleucine</td>
</tr>
<tr>
<td>L-Leucine</td>
</tr>
<tr>
<td>L-Lysine</td>
</tr>
<tr>
<td>L-Methionine</td>
</tr>
<tr>
<td>L-Phenylalanine</td>
</tr>
<tr>
<td>L-Tryptophan</td>
</tr>
<tr>
<td>L-Valine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vitamins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A IU, (mcg R.E.)</td>
</tr>
<tr>
<td>Vitamin D IU, (mcg R.E.)</td>
</tr>
<tr>
<td>Vitamin E IU, (mg R.E.)</td>
</tr>
<tr>
<td>Vitamin K, mcg</td>
</tr>
<tr>
<td>Thiamine, mg</td>
</tr>
<tr>
<td>Riboflavin, mg</td>
</tr>
<tr>
<td>Vitamin B6, mg</td>
</tr>
<tr>
<td>Niacin, mg</td>
</tr>
<tr>
<td>Folic Acid, mcg</td>
</tr>
<tr>
<td>Folic Acid, mg</td>
</tr>
<tr>
<td>Pantothenic Acid, mg</td>
</tr>
<tr>
<td>Biotin, mcg</td>
</tr>
<tr>
<td>Vitamin C, mg</td>
</tr>
<tr>
<td>Choline, mg</td>
</tr>
<tr>
<td>Cholesterol, mg</td>
</tr>
</tbody>
</table>
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For more information or product samples, please contact us.

🇺🇸 US: (800) 365-7354  🇨🇦 Canada: (877) 636-2283

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