

PKU

cooler®



Innovation in Nutrition

Keeping it simple

At Vitaflo, we understand that product selection for your patients can be complicated. So we are keeping it simple.

Cooler has revolutionised the way patients take their supplements:

- **Assists in compliance** - a recent long term study showed use of coolers is associated with better compliance by lowering blood phe and improving nutritional biochemical markers.<sup>1</sup>
- **Increasing protein intake is easier** - simply increase the pack size as the patient grows.
- **Provides optimal nutrition, including preformed docosahexaenoic acid** - nutrient profile is in-line with current Australian NRVs and suggested daily targets.
- **Drink it and you're done!** - no mess, no weighing powdered formula and no washing up.
- **Looks normal** - supplement can be taken anywhere without being noticed; improving independence and compliance.
- **Convenience** - free home delivery service and excellent customer service and support.

## One product, 3 pack sizes

Suitable from 3 years of age to adulthood.



PKU cooler 10  
10g PE






PKU cooler 15  
15g PE



PKU cooler 20  
20g PE

## How to use the PKU cooler system

| Patient Age Range        | Intake from Protein Equivalent | Cooler Solutions  | % RDI <sup>3</sup> of Key Nutrients   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
|--------------------------|--------------------------------|---|---|---------|--------|------------|---------|-----------|--------|-----------|---------|------------|--------|------|---------|------|---------|-----------|---------|
| 3 years<br>4-8 years     | 30g day                        | 3 x cooler 10s<br>                       | <table> <tr><td>Calcium</td><td>86-120</td></tr> <tr><td>Phosphorus</td><td>107-116</td></tr> <tr><td>Vitamin A</td><td>98-131</td></tr> <tr><td>Vitamin D</td><td>300</td></tr> <tr><td>Folic Acid</td><td>75-100</td></tr> <tr><td>Iron</td><td>111-123</td></tr> <tr><td>Zinc</td><td>210-280</td></tr> <tr><td>Magnesium</td><td>127-206</td></tr> </table> | Calcium | 86-120 | Phosphorus | 107-116 | Vitamin A | 98-131 | Vitamin D | 300     | Folic Acid | 75-100 | Iron | 111-123 | Zinc | 210-280 | Magnesium | 127-206 |
| Calcium                  | 86-120                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Phosphorus               | 107-116                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Vitamin A                | 98-131                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Vitamin D                | 300                            |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Folic Acid               | 75-100                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Iron                     | 111-123                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Zinc                     | 210-280                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Magnesium                | 127-206                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| 9-13 years               | 45g day                        | 3 x cooler 15s<br>                       | <table> <tr><td>Calcium</td><td>69-90</td></tr> <tr><td>Phosphorus</td><td>64</td></tr> <tr><td>Vitamin A</td><td>97</td></tr> <tr><td>Vitamin D</td><td>450</td></tr> <tr><td>Folic Acid</td><td>75</td></tr> <tr><td>Iron</td><td>206</td></tr> <tr><td>Zinc</td><td>210</td></tr> <tr><td>Magnesium</td><td>102</td></tr> </table>                           | Calcium | 69-90  | Phosphorus | 64      | Vitamin A | 97     | Vitamin D | 450     | Folic Acid | 75     | Iron | 206     | Zinc | 210     | Magnesium | 102     |
| Calcium                  | 69-90                          |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Phosphorus               | 64                             |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Vitamin A                | 97                             |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Vitamin D                | 450                            |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Folic Acid               | 75                             |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Iron                     | 206                            |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Zinc                     | 210                            |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Magnesium                | 102                            |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| 14-18 years<br>19+ years | 60g day                        | 3 x cooler 20s or<br>4 x cooler 15s<br> | <table> <tr><td>Calcium</td><td>92-120</td></tr> <tr><td>Phosphorus</td><td>86-107</td></tr> <tr><td>Vitamin A</td><td>87-112</td></tr> <tr><td>Vitamin D</td><td>200-600</td></tr> <tr><td>Folic Acid</td><td>76</td></tr> <tr><td>Iron</td><td>122-274</td></tr> <tr><td>Zinc</td><td>120-240</td></tr> <tr><td>Magnesium</td><td>79-106</td></tr> </table>   | Calcium | 92-120 | Phosphorus | 86-107  | Vitamin A | 87-112 | Vitamin D | 200-600 | Folic Acid | 76     | Iron | 122-274 | Zinc | 120-240 | Magnesium | 79-106  |
| Calcium                  | 92-120                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Phosphorus               | 86-107                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Vitamin A                | 87-112                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Vitamin D                | 200-600                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Folic Acid               | 76                             |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Iron                     | 122-274                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Zinc                     | 120-240                        |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |
| Magnesium                | 79-106                         |   |   |         |        |            |         |           |        |           |         |            |        |      |         |      |         |           |         |

All 3 pack sizes have the same nutritional content per 100ml. Your patient can choose the combination which best meets their protein requirements and maintains good PKU control.

As the patient's protein requirement increases, they may simply change to a larger pack size. This assists in eliminating stress that often occurs

when a child needs to change to a different protein substitute, and so accept a new taste to fulfil growing needs.

Micronutrient and protein content in cooler are closely linked. Meeting an individual's protein requirement<sup>2,3</sup> solely from cooler will ensure that key micronutrient needs are greatly satisfied.

## Cooler is Nutritionally Up-to-Date

- Source of calcium and phosphorus - provides > 64% RDI<sup>3</sup> for each (see table adjacent.)
- Content of Vitamins A & D, Folic Acid and Iron are in line with current Australian NRVs.<sup>3</sup>
- Contains preformed DHA.

## Low GI and Calorie Content

- PKU cooler has a Glycaemic Index (GI) of 19 - Low  $\leq 55^*$
- Consumption of low GI foods assists with weight control<sup>4,5</sup> and may help to normalise appetite<sup>5</sup>.
- Cooler is low in carbohydrate, contains negligible fat and has fewer calories than the majority of protein substitutes\*\*.
- Cooler is available in white - neutral tasting, or in orange, purple and red flavoured options.



|                  | PKU Cooler 10 | PKU Cooler 15 | PKU Cooler 20 |
|------------------|---------------|---------------|---------------|
| Energy kcal / kJ | 65/274        | 97/410        | 130/549       |
| Carbohydrate g   | 4.4g          | 6.6           | 8.9           |
| Fat g            | 0.8g          | 1.2           | 1.6g          |

**Allergen Declaration:** Contains fish (tuna oil), soya (soya lecithin)

\*Meets Australian Standard AS 4694-2007 methodology  
\*\*Data on file



## The PKU cooler System and DHA

Preformed docosahexaenoic acid (DHA) is added to the PKU cooler System.

- Patients receive a known quantity of DHA and so do not need to be concerned about taking additional supplements; such as fish oil capsules, or about an excessive Vitamin A intake.
- The DHA content in cooler assists in meeting suggested daily targets (SDTs) for reducing chronic disease risk in the general population.<sup>3</sup>
- A growing body of evidence shows consumption of DHA is associated with a reduced risk of cardiovascular disease and thrombotic stroke.<sup>3a</sup>

|                      | Per 100ml | Per cooler 10 (87ml) | 3 x cooler 10 | 3 x cooler 15 | Typical adult Intake/day |               |
|----------------------|-----------|----------------------|---------------|---------------|--------------------------|---------------|
|                      |           |                      |               |               | 3 x cooler 20            | 4 x cooler 20 |
| Protein equivalent g | 11.5      | 10                   | 30            | 45            | 60                       | 80            |
| DHA mg               | 77        | 67                   | 201           | 300           | 402                      | 536           |

## DHA in cooler

- Patients with PKU on diet have low intakes of alpha-linoleic acid (ALA: DHA precursor).<sup>6,7</sup> In addition, the endogenous synthesis of ALA to DHA is limited.<sup>8</sup>
- A recent meta-analysis concluded that for all biochemical markers investigated; patients with PKU have significantly lower levels of DHA compared to healthy controls.<sup>9</sup>
- Data demonstrates that for patients with PKU, dietary pre-formed DHA supplementation significantly increases the contribution of DHA to total plasma lipids.<sup>10,11</sup>

## DHA - No compromise on taste

- In UK trials 90-100% rated PKU cooler as acceptable.<sup>12</sup>
- 86-90% detected no difference in taste when DHA was added to PKU cooler.<sup>12</sup>

## Why not add AA to cooler?

- Linoleic acid (LA) is the precursor to arachidonic acid (AA). LA is abundantly available in the PKU diet in the form of vegetable oil and margarine. AA levels appear to be adequate in patients following a PKU diet; likely due to the large quantities of LA in the diet.<sup>7,13</sup>

## DHA and Maternal PKU

- Addition of DHA to PKU cooler makes it the ideal choice for pregnant women and women planning a pregnancy.
- PKU cooler contains appropriate levels of key micronutrients such as iron, calcium, zinc, Vitamin D and choline.<sup>3</sup>
- Patients receive a known quantity of DHA without concern of excessive Vitamin A consumption.
- Smaller pack sizes; providing less volume and taken more frequently, and subtle flavour options (particularly white - neutral), may help when nausea is problematic.



| Nutrient       | Australian RDI for pregnancy | Recommended Upper Intake | 60g Protein from Cooler* | 80g Protein from Cooler* |
|----------------|------------------------------|--------------------------|--------------------------|--------------------------|
| Vitamin A (ug) | 800                          | 3000                     | 783                      | 1044                     |
| Calcium (mg)   | 1000 - 1300                  | 2000                     | 1200                     | 1600                     |
| Iron (mg)      | 27                           | 45                       | 21.9                     | 29.2                     |

\*based on cooler 20.

## PBS Listed

Restricted benefit for patients with proven phenylketonuria.

### Maximum Quantity

PKU cooler 10: 87ml x 30 x 4 with 5 repeats

PKU cooler 15: 130ml x 30 x 4 with 5 repeats

PKU cooler 20: 174ml x 30 x 4 with 5 repeats

Cooler is available in 5 different flavour options: **Orange, Purple, White, Red & Yellow.**

## Shelf Life

Store in a cool, dry place. Once open drink immediately or refrigerate and use within 24 hours.

## Important

PKU cooler is a food for special medical purposes and must be used under medical supervision. Suitable from 3 years of age. Not for use as a sole source of nutrition. For enteral use only.

## References

- <sup>1</sup>Gokmen-Ozel H, Macdonald A, Daly A, Hall K, Chakrapani A. Long Term Efficacy of 'Ready to Drink' protein substitute in PKU. *Mol Genet Metab*. 2009; **98**: Abstract 170.
- <sup>2</sup>Report of Medical Research Council Working Party on Phenylketonuria. *Arch Dis Child* 1993; **68**: 426-427.
- <sup>3</sup>NHMRC. Nutrient Reference Values for Australia and New Zealand. Commonwealth of Australia, 2006.
- <sup>3a</sup>Chronic Disease/Macronutrient Balance/n-3 and n-6 fatty acids in <sup>3</sup> above
- <sup>4</sup>Lin et. al. Factors Influencing GI Ranking - Glycemic Index. *Am J Clin Nutr* 2003; **78**: 923.
- <sup>5</sup>The University of Sydney. About Glycemic Index. [www.glycemicindex.com/about.php](http://www.glycemicindex.com/about.php) Last updated August 2014.
- <sup>6</sup>Rose HJ, White F, MacDonald A, Rutherford PJ, Favre E. Fat intakes of children with PKU on low phenylalanine diets. *J Hum Nutr Diet* 2005; **18**: 395-400.
- <sup>7</sup>Poge AP, et al. Long-chain polyunsaturated fatty acids in plasma and erythrocyte membrane lipids of children with phenylketonuria after controlled linoleic acid intake. *J Inherit Metab Dis*. 1998; **21**: 373-381.
- <sup>8</sup>Calder PC. Mechanisms of action of (n-3) fatty acids. *J Nutr*. 2012; **142**:592S-599S.
- <sup>9</sup>Lohner S, Fekete K, Desci T. Lower n-3 long-chain polyunsaturated fatty acid values in patients with phenylketonuria: a systematic review and meta-analysis. *Nutr Res*. 2013; **33**: 513-520.
- <sup>10</sup>Agostini C, Riva E, Biasucci G, et al. The effects of n-3 and n-6 polyunsaturated fatty acids on plasma lipids and fatty acids of treated phenylketonuric children. *Prostaglandins Leukot Essent Fatty Acids*. 1995; **53**: 401-404.
- <sup>11</sup>Yi SH, Kable JA, Evatt ML, Singh RH. A randomized, placebo-controlled, double-blind trial of supplemental docosahexaenoic acid on cognitive processing speed and executive function in females of reproductive age with phenylketonuria: a pilot study. *Prostaglandins Leukot Essent Fatty Acids*. 2011; **85**: 317-327.
- <sup>12</sup>Data on file.
- <sup>13</sup>Leatham Yi SH, Moser AB, Singh RH. Relationship between medical food type consumption and plasma polyunsaturated fatty acid status of females of childbearing age with phenylketonuria. *FASEB J*. 2007; **21**: 668.1.

Starter packs containing samples of all flavour options are available: **Orange, Purple, White, Red or Yellow.** Contact Vitaflo to order.



### Vitaflo's free home pharmacy service.

Call 1800 230 889 or email [v2u@vitaflo.com.au](mailto:v2u@vitaflo.com.au) to register for this convenient and time saving delivery service.



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