Primal Multi™

designs for health®

Unique multivitamin & mineral formula based on evolutionary intakes to support optimal health

By Cristiana Paul, MS

Primal Multi™ is a first-of-its-kind multivitamin, mineral and phytonutrient blend specifically formulated to mimic the nutrient intakes found in an optimal evolutionary human diet. The levels of nutrients provided by Primal Multi™ were devised based on the concept of evolutionary adaptation of human physiology and correspond to a whole food, nutrient-dense diet that supplies adequate energy intake. The ingredients in Primal Multi™ have been sourced to be naturally occurring or bioidentical. In addition to key vitamins and minerals, this formula contains select phytonutrients proven to have beneficial effects for health (such as lutein, lycopene, resveratrol, wild blueberry, broccoli seed/sprout, citrus bioflavonoids and more), which were likely consumed in greater quantities in the evolutionary past than they are in the modern diet.

The majority of commercially available multivitamin and mineral formulas are designed to meet 100% of the Recommended Daily Allowance (RDA) or Adequate Intake (AI), or some percentage thereof. However, RDA/AI values were not derived for the purpose of optimizing health and physiological function, nor reducing risk for age- or lifestyle-related degenerative diseases. Rather, these levels represent the minimum intake required to reduce risk for overt debility, manifested by deficiency diseases such as scurvy or pellagra.[2] Other multivitamin and mineral formulas are designed based on the concept that many genetic polymorphisms affecting nutrient status could be alleviated by supplementing with certain vitamins or minerals at levels 10-100 times higher than the RDA/AI.[35]

The optimal intake of vitamins and minerals for the general population remains open for debate and is a topic of ongoing research. The formulation of Primal Multi™ was guided by principles of evolutionary biology as well as common genetic polymorphisms and consideration of markers of subclinical deficiencies, as assesed by lab tests and increased risk of disease or impaired function.

The Guiding Principle of Evolutionary Biology

Evolutionary biology and cellular studies converge in a new approach in defining optimal intakes of essential nutrients for optimizing health and physiological function. Human physiology was shaped by the type of diet naturally available for millions of years.[36-38] Many researchers believe that human health may be best supported by the types and amounts of nutrients humans were exposed to during the Paleolithic era. Although precise intakes of plant and animal foods, and thus the exact composition of the human diet, may have differed based on season and geographic location, there are overarching general principles that can inform what the human body is optimally suited to. This concept provides a rational framework for integrating findings from diverse but overlapping sciences: nutrition, biochemistry, physiology, paleontology and genetics.[39-41]

A large body of research describes common characteristics of “Paleo-like” diets with respect to macro- and micronutrient content.[42,43] This system of reference may be considered a foundation for optimal human nutrition. Beyond this starting point, it is reasonable to adjust one’s diet and supplementation based on individual goals and health status, taking into account disease states, aging, performance needs, genetics and more.

Fenech et al. proposed redefining Australian RDAs for folate, B12, and other micronutrients to levels proven to support healthy DNA replication (also referred to as genomic stability). This criterion is an important determinant of optimal health at the cellular level.[19-22] Interestingly, these newly proposed Australian RDAs are higher in B12 and folate than US RDAs but are comparable to estimated Paleolithic era intakes (see link for table 1). This is likely not a coincidence since Paleo nutrition had to support healthy DNA replication to ensure successful human evolution.[23]

Comparison of Primal Multi™, estimated Paleo diets, average US intake and US RDA/AI
The design of Primal Multi™ was guided by the concept of evolutionary adaptation of human physiology. Table 1 (see link) lists ranges of estimated Paleo era nutrient intakes based on the following data: (a) values reported by Cordain, based on a 2200 kcal/day diet[1]; (b) a recalculation of Cordain's data with more advanced nutrition analysis software; (c) the evaluation of another sample Paleo diet.[3-5] The data in Table 1 show that average Paleo nutrient intakes are significantly higher than current US RDA/AI, except for calcium and molybdenum. The case for calcium requirements is debatable and it is possible that the Paleo levels may be sufficient if vitamin D status and intake of magnesium and vitamin K are optimal.

A four-capsule serving of Primal Multi™ offers comparable amounts of essential micronutrients to those found in a 2200 kcal "Paleo-like" diet, with the exceptions of vitamins A and C, calcium, magnesium and choline. Primal Multi™ nutrient levels are higher than the RDA/AI, except for calcium, magnesium and choline. These nutrients were included at lower levels, taking into consideration that average US intake of these nutrients is likely sufficient for most people and to give healthcare practitioners the freedom to help patients customize individual intakes based on diet and lifestyle factors. Vitamin A should be mostly derived from a diet high in vegetables and fruits that provide carotenoid precursors, and such foods would also provide additional vitamin C. Consumption of leafy greens would augment the amount of magnesium and calcium in Primal Multi™ and may be especially important for those who do not consume dairy. Choline is synthesized in the body and can also be obtained from diverse dietary sources such as eggs, beef, poultry, seafood, and some vegetables. Thus, this product was formulated to augment a healthy diet and to provide unique phytonutrients that were likely a larger part of the human diet in the evolutionary past than they are today.

Ingredient Highlights

The forms of vitamins in Primal Multi™ are bioidentical to those occurring in the human body and in a whole foods diet:

- **Vitamin C:** two forms, as ascorbic acid and naturally sourced from acerola
- **Vitamin B1:** two forms, as thiamine and benfotiamine
- **Vitamins B2 & B6:** provided in the naturally occurring phosphorylated forms: riboflavin-5'-phosphate and pyridoxal-5-phosphate, respectively
- **Vitamin B3:** two forms, as niacin and niacinamide
- **Vitamin B5:** two forms, as pantothenic acid and pantethine
- **Vitamin B12:** provided in the naturally occurring methylcobalamin form. (See the Tricobalamin™ tech sheet for a detailed description of cobalamin metabolism, bioavailability and rationale for dosing at levels above the RDA in various populations.)

Vitamin A: 80% of the vitamin A in this formula is represented by a natural carotenoid mix from palm oil with the remainder as preformed vitamin A, retinyl palmitate. This is based on the fact that the majority of vitamin A sources in the Paleolithic diet were derived from plant-sourced carotenoids while preformed vitamin A was found mostly in animal liver and eggs.

Vitamin E Isomers: provided as tocotrienols from a high delta-tocotrienol annatto extract. Tocotrienols have higher antioxidant activity and unique benefits not observed with tocopherols. (See the Annatto-E™ tech sheet for an extensive discussion of tocotrienol research and the shortcomings of tocopherols.) Tocotrienols are not easily found in common diets and their assimilation is impaired by concurrent consumption of tocopherols. Thus, tocopherols are not included in Primal Multi™; they can easily be obtained through the consumption of nuts, seeds, avocado and olive oil.

Vitamin D: The amount of vitamin D provided in Primal Multi™ is intended to be augmented by endogenously synthesized vitamin D from sun exposure and/or supplementation using one of Designs for Health's vitamin D+K formulas, as guided by blood levels.

Vitamin K: provided as two naturally occurring forms—K1, a form that is established as essential, and an extensive range of vitamin K2 forms (MK-4, MK-6, MK-7, MK-8, MK-9). The RDA for vitamin K1 was derived solely with regard to optimal blood clotting, but new research shows that higher levels are required to raise vitamin K status to the level that supports its roles in bone metabolism and arterial health.

The precise forms and specific levels of K2 that were characteristic of a Paleo diet are not known for certain, but MK-4 was likely an important component since it is the main form stored in animal foods and in the human body. Consider using Tri-K™ for older men and women, especially postmenopausal women, who may need higher levels of vitamin K. (See the Tri-K™ tech sheet and the vitamin K chapter in the Textbook of Natural Medicine[5].)

Folate: provided as Quatrefolic®, a glucosamine salt 5-MTHF form of folate proven to dissociate easily before absorption and raise plasma folate levels. This form of 5-MTHF is likely more bioavailable than naturally occurring folates because they are covalently bonded to polyglutamate chains.[13] 5-MTHF is superior to folic acid, which is no longer considered adequate for the following reasons: (a) genetic polymorphisms of folate metabolism are common and are responsible for a 35-70% reduced conversion of folic acid to the active form, 5-MTHF;[13,14] (b) synthetic folic acid (derived from fortified foods and/or supplements) may increase the risk of various cancers, reduce natural killer (NK) cell activity, and may have other detrimental effects;[14,47] (c) human physiology is adapted to natural folates. Folic acid is not a naturally occurring molecule and has a distinct pathway of cell entry and different metabolic transformations compared to natural folates. These differences may be responsible for the detrimental effects associated with folic acid.[14,15]

Selenium: provided as SelenoExcell®, a natural food form of selenium derived from baker's yeast (*Saccharomyces cerevisiae*). Results obtained with SelenoExcell® supplementation have been proven superior to other forms of selenium such as selenomethionine and sodium selenite.[30]

Lecithin: included to enhance absorption of other ingredients and as a source of choline, a building block for acetylcholine, cell membranes, and mitochondrial phospholipids. It also participates in methylation reactions after conversion to betaine.[6] Additional choline may be supplemented from DFH's phosphatidylcholine powder or softgels, or formulas containing glycerophosphocholine (GPC).

Mineral Chelates: Calcium, magnesium, zinc, copper, manganese, molybdenum, chromium and boron are provided as highly bioavailable chelates. Mineral chelates do not depend on stomach acid for liberation and may be more effective for those with hypochlorhydria or other conditions that impair mineral absorption. Chelated minerals are designed to bypass obstacles to absorption and assimilation, such as food phytates, oxalates, fiber, ionic minerals or even medications that interfere with mineral absorption.

While Paleolithic era diets provided iron and iodine, these are not included in Primal Multi™ since intake should be carefully managed on an individual basis due to potential side effects from excessive amounts.

Concentrated Phytonutrients

Lutein: A unique carotenoid that accumulates preferentially in the macula and brain, where it supports healthy function.[33] Average US intake is 1-2 mg lutein/day, but individuals in the highest percentile of intake (3–5 mg/d) experienced a reduced risk of early, intermediate, and advanced macular degeneration.[32] In adults, higher lutein status is associated with better cognitive performance, and lutein supplementation has been shown to improve cognition.[33]

Lycopene: A carotenoid with antioxidant and anti-inflammatory effects relevant to cardiovascular and neurodegenerative diseases as well as some cancers.[10]

Muscadine Grape Extract (skin & seeds): Muscadine grapes are among the highest antioxidant fruits and have been shown to have anti-inflammatory effects on immune cells in vitro.[28] Muscadine seed and skin extracts were also shown to inhibit formation of advanced glycation end-products (AGEs), which are associated with the pathogenesis of diabetic complications.[27]

Wild Blueberry Complex: Provided as AuroraBlue®, an organic, gently dried whole fruit blueberry concentrate. As a whole fruit concentrate and not an extract, AuroraBlue® is more likely to retain the potency of all active blueberry constituents. It delivers up to 10 times the bioactive compounds (such as anthocyanidins) compared to cultivated blueberries and more than double the antioxidant activity (ORAC) of pomegranate, grapes, raspberries, blackberries, and oranges. Research shows that the flavonoids, polyphenols, phenolic acids, pyruvic acid, chlorogenic acid, and other components of blueberry have anticancer and anti-inflammatory properties, are hepatoprotective and supportive for healthy vision, cognitive function, cardiovascular and immune function, and may help support a healthy body weight.[34]

Broccoli Blend: Composed of a broccoli seed extract (standardized to 8% sulforaphane glucosinolate [SGS]), and a broccoli sprout concentrate containing the myrosinase enzyme (MYR). MYR converts SGS to sulforaphane (SFN) during digestion, maximizing its bioavailability. This blend has approximately 8x higher SFN potential compared to other SGS formulas without MYR. Including MYR facilitates this critical conversion without depending on MYR produced by intestinal bacteria. (See the BroccoProtect™ tech sheet for more details on SFN.)

Acerola: A source of natural vitamin C as well as carotenoids, phenolics, anthocyanins, and flavonoids.[12]

Citrus Bioflavonoids: Sandardized to 50% hesperidin. Studies with various citrus flavonoids that include hesperidin have found these compounds to have beneficial biological activities, including antioxidant and anti-inflammatory effects.[24] Citrus flavonoids have been shown to inhibit the synthesis and activity of different pro-inflammatory mediators, including the arachidonic acid derivatives, prostaglandins E2, F2, and thromboxane A2.[25] Regarding cardiovascular health, flavonoids exert antithrombotic, anti-ischemic and vasorelaxant effects.[25] The potential health benefits of these compounds echo those noted above for wild blueberry: preclinical studies and clinical trials have demonstrated that hesperidin may help improve blood lipids, support healthy neurological function, and improve insulin sensitivity.[26]

Supplement Facts

Serving Size 4 capsules

Servings Per Container 30

Amount Per Serving		% Daily Value
Vitamin A (as Mixed Carotenoids from palm tree fruit and Palmitate)	320 mcg RAE	36%
Vitamin C (as Ascorbic Acid and Acerola)	400 mg	444%
Vitamin D (as Cholecalciferol)	50 mcg (2000 IU)	250%
Vitamin K (as K1 Phytonadione, Vitamin K2 Menaquinone-4 and MenaQ7® Full Spectrum MK-6, MK-7, MK-9)	450 mcg	375%
Thiamin (as Thiamin HCl)	2.4 mg	200%
Riboflavin (Vitamin B-2) (as Riboflavin-5-Phosphate)	4.2 mg	323%
Niacin (as Niacinamide and Niacin)	60 mg NE	375%
Vitamin B-6 (as Pyridoxial-5-Phosphate)	6.7 mg	394%
Folate (as Quatrefolic® [6S]-5-methyltetrahydrofolate, glucosamine salt 825 mcg)	680 mcg DFE	170%
Vitamin B-12 (as Methylcobalamin)	200 mcg	8333%
Biotin (as d-Biotin)	100 mcg	333%
Pantothenic Acid (as d-Calcium Pantothenate)	5 mg	100%
Calcium (as di-Calcium Malate)	50 mg	4%
Magnesium (as di-Magnesium Malate)	150 mg	36%
Zinc (as Zinc Bisglycinate Chelate)	15 mg	136%
Selenium (as SelenoExcell®)	100 mcg	182%
Copper (as TRAACS® Copper Bisglycinate Chelate)	1 mg	111%
Manganese (as TRAACS® Manganese Bisglycinate Chelate)	1 mg	43%
Chromium (as TRAACS® Chromium Nicotinate Glycinate Chelate)	200 mcg	571%
Molybdenum (as TRAACS® Molybendum Glycinate Chelate)	100 mcg	222%
Wild Blueberry Complex (consisting of *Vaccinium ovalifolium Sm., Vaccinium alaskaense* How., *Vaccinium uliginosum L.,* and *Vaccinium cespitosum Michx.*)(fruit, leaves, stems)	100 mg	*
Muscadine Grape Powder (*Vitis rotundifolia*)(skin and seeds)	100 mg	*
Citrus Bioflavonoids	100 mg	*
Broccoli Seed Extract (*Brassica oleracea italica*)(seed)	75 mg	*
Quercetin	50 mg	*
Broccoli Sprout Powder (*Brassica oleracea italica*)(sprout)	25 mg	*
Vitamin E Isomers (as DeltaGold® delta and gamma tocotrienols)	25 mg	*
Trans Resveratrol (*Polygonum cuspidatum*)(root)	10 mg	*
Pantethine	5 mg	*
Lutein Esters	3 mg	*
Lycopene	3 mg	*
Boron (as Bororganic Glycine)	1 mg	*
Benfotiamine	1 mg	*
Vanadium (as TRAACS® Vanadium Nicotinate Glycinate Chelate)	30 mcg	*

*Daily Value not established

Other Ingredients: Cellulose (capsule), microcrystalline cellulose, sunflower lecithin, vegetable stearate, silicon dioxide.

Recommended Use:
Take four capsules per day, or as directed by your health care practitioner (divided dosing recommended)

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