

## NATUROKINETICS<sup>SM</sup> - Paying Attention to Bioavailability *By Leonid Ber, MD, Protocol Senior Medical Scientist*

In the world of novel biological compounds, pharmacokinetics is a must. Today, no medicine can be launched without studying how it is liberated from a particular delivery form, absorbed in the GI tract, distributed throughout the body, metabolized and eliminated. However, in the world of dietary supplements that contain chemicals naturally occurring in the diet, the “kinetic” body of knowledge is far from complete. There are several reasons why this information is not generally available to the practitioners. Oftentimes it is due to the extremely complex nature of the foodstuff. Sometimes it is problematic to study the metabolism of these compounds *in vivo* because they are already a part of normal metabolism in the body. Things can get even more complicated when a substance in question can be both obtained through diet and synthesized in the body. To answer these questions, a new systematic approach has been pioneered by Protocol For Life Balance™ - NATUROKINETICS<sup>SM</sup>.

Below are two examples of how research conducted under the principles of NATUROKINETICS<sup>SM</sup> can bring a better understanding of using dietary supplements in nutritional practice.

### Nutri-Dose™ B-12 10,000 mg

This is a liquid dietary supplement delivering a high dose cobalamin along with other B group vitamins and 100 mg of vitamin C in a 15 ml single-serving tube. There are two known physiological aspects of Vitamin B<sub>12</sub> absorption<sup>1</sup>:

1. Absorption via intrinsic factor-dependent mechanism. Produced by parietal cells of the stomach, intrinsic factor is a protein known to bind to cobalamin, which is followed by the absorption of their complexes by the specialized cells in the terminal ileum of the small bowel. Production of intrinsic factor is a limiting factor in the amount of cobalamin that can be absorbed via this mechanism at a time (up to 3 mcg).
2. Absorption by passive diffusion. The amount of vitamin B<sub>12</sub> absorbed via this mechanism accounts for about 1% of orally administered amount. This type of absorption occurs throughout the length of the entire intestine.

The effect of a single administration Nutri-Dose™ B-12 on cobalamin serum level was studied in male volunteers without cobalamin deficiency (serum cobalamin > 200 pg/ml).<sup>2</sup> The average cobalamin level rose more than 100% within 1 hour post administration ( $T_{max}$ ) and remained elevated 24 hours post-administration. The study suggests outstanding systemic bioavailability of cobalamin in the form of Nutri-Dose™. (Fig.1)

### Magnesium Citrate 400mg Softgels

Magnesium is absorbed along the entire intestinal tract via unsaturable passive and saturable active transport. Most of absorption is known to occur in the distal jejunum and ileum. The degree of magnesium absorption depends on the type of Mg salt.<sup>3</sup>

Relative bioavailability of three preparations of Mg (amino-acid chelate, citrate and oxide) were compared at a daily dose of 300 mg of elemental Mg in 46 healthy individuals.<sup>4</sup> Both acute and chronic supplementation with Mg Citrate showed superior absorption as compared with either other forms. (Fig.2)

Thus knowledge of the Naturokinetics<sup>SM</sup> of a product can be a significant factor in the practitioners' choice of a dietary supplement. Understanding the degree to which a product is absorbed in the body can reassure practitioners that they are providing their patients with the most therapeutically effective product to address the patients' healthcare needs. Protocol for Life Balance is dedicated to developing n aturokinetic information to aid practitioners in ensuring bioavailability of the product.

#### Aspects of NATUROKINETICS<sup>SM</sup>

- Liberation of a nutrient from a delivery form
- Absorption (crossing GI epithelium)
- Distribution (i.e., crossing blood-brain barrier)
- Metabolism (breakdown of a nutrient in the body)
- Elimination (of the nutrients and their metabolites, including enterohepatic recirculation, etc)

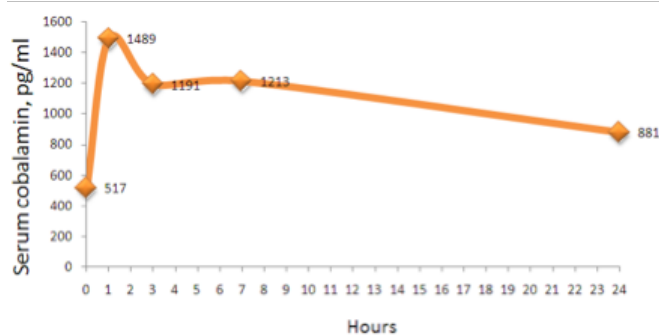


Fig.1. Average serum cobalamin levels before and after administration of a single serving of Nutri-Dose™ B-12 10,000 mcg.

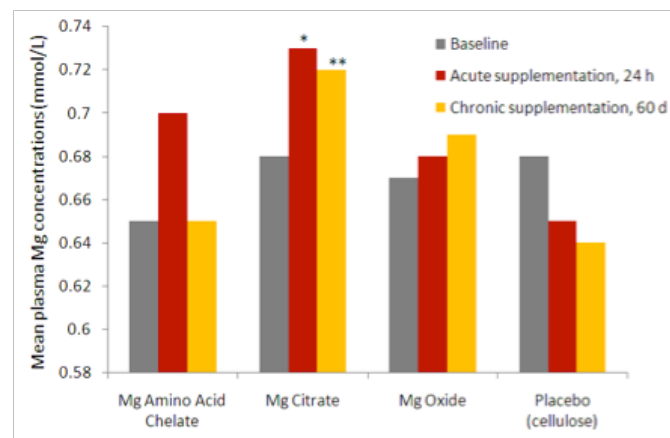


Fig.2. Plasma Mg concentrations following acute and chronic supplementation with different forms of Mg (300 mg/day) or placebo in healthy human volunteers (\* $p=0.026$ ; \*\* $p=0.006$ ).

Name: \_\_\_\_\_

Zip Code: \_\_\_\_\_

## Magnesium Citrate

180 Softgels.



Supplement Facts		
Serving Size 3 Softgels Servings Per Container 60		
	Amount Per Serving	% Daily Value
Calories	20	
Calories from Fat	20	
Total Fat	2 g	3%*
Trans Fat	0 g	†
Magnesium (from Magnesium Citrate, Magnesium Glycinate and Magnesium Malate)	400 mg	100%

\* Percent Daily Values are based on a 2,000 calorie diet.  
† Daily Value not established.

Other ingredients: Rice Bran Oil, Softgel Capsule (gelatin, glycerin, water), Beeswax and Sunflower Lecithin.

Contains no sugar, salt, starch, yeast, wheat, gluten, corn, soy, milk, egg, shellfish or preservatives.

Magnesium acts as a mineral cofactor in an estimated 300 enzymatic reactions and is necessary for the healthy function of every organ in the body.\* Magnesium is a mineral that is critical for energy production and metabolism, muscle contraction, nerve impulse transmission, and bone mineralization.\* Magnesium status is important for regulation of calcium balance through its effects on the parathyroid gland.\* In addition, Magnesium is essential for the maintenance of normal vascular tone and healthy cardiac function.\* Easily absorbed Magnesium Citrate, Magnesium Glycinate and Magnesium Malate are combined in softgels for superior bioavailability.\*

Code P1298 Size 180 Gels

QTY

## Nutri-Dose™ B-12

10,000 mcg Shots



Supplement Facts		
Serving Size 1 Vial (15 mL) Servings Per Container 12		
	Amount Per Serving	% Daily Value
Calories	35	
Total Carbohydrate	9 g	3%*
Sugars	0 g	†
Sugar Alcohol (as Xylitol)	1 g	†
Vitamin C (as Ascorbic Acid)	100 mg	167%
Vitamin B-1 (from Thiamine HCl)	3 mg	200%
Riboflavin (Vitamin B-2)	3.4 mg	200%
Niacin (as Niacinamide) (Vitamin B-3)	50 mg	250%
Vitamin B-6 (from Pyridoxine HCl)	10 mg	500%
Folic Acid	400 mcg	100%
Vitamin B-12 (as Cyanocobalamin)	10 mg (10,000 mcg)	166,667%
Biotin	300 mcg	100%
Pantothenic Acid (from Calcium Pantothenate)	50 mg	500%
Choline (from Choline Bitartrate)	5 mg	†
Inositol	5 mg	†

\* Percent Daily Values are based on a 2,000 calorie diet.  
† Daily Value not established.

B Vitamins are essential components in most major metabolic reactions as they play an important role in energy production, including the metabolism of lipids, carbohydrates, and proteins. Vitamin B-12 facilitates energy production and is required for nucleic acid (DNA) synthesis, methionine synthesis from cysteine, and normal myelin synthesis in the nervous system. Along with Vitamin B<sub>6</sub> and folic acid, adequate levels of Vitamin B-12 are required to maintain healthy plasma homocysteine levels already in the normal range.\*

The elderly and strict vegetarians are often at risk for Vitamin B-12 deficiency, either due to low dietary intake or decreased absorption. B-12 10,000 mcg Nutri-Dose™ is a convenient and palatable liquid formulation that is absorbed quickly by the body, delivering rapid, energizing nutrition.\*

Code P0453 Size 12:15 mL

QTY

## Clinically Lean™

120 Vcaps®



Supplement Facts	
Serving Size 1 Vcap®	
	Amount Per Serving
Green Tea Extract Phytosome (GreenSelect®)	150 mg**
[Green Tea Extract (Camellia sinensis) (Leaf/Phosphatidyl Choline Complex) (min. 13% EGCG (19.5 mg))] (Caffeine-Free)	

\* Daily Value not established.

Typical Profile of naturally occurring Catechins per Vcap®\*\* (from Green Tea Extract Phytosome and Decaffeinated Green Tea)

Total Catechins 80 mg  
EGCg 45 mg

\*\* per ingredient nutritional profiles

Other ingredients: Decaffeinated Green Tea (Camellia sinensis) (Leaf), Cellulose (capsule), Cellulose Powder, Stearic Acid (vegetable source) and Silica.

Contains soy derivative. Contains no sugar, salt, yeast, wheat, gluten, milk, egg, shellfish or preservatives. Vegetarian/Vegan Product.

GreenSelect® is a registered trademark of Indena S.p.A.; Vcaps® is a registered trademark of Capsugel.

Green Tea polyphenols are well known for their diverse health-promoting effects. Their potent antioxidant properties, as well as their ability to help to balance the inflammatory response, can help to protect both cardiovascular and neurological health.\* Green Tea polyphenols have been found to have a thermogenic effect, which can help to enhance energy expenditure.\* Clinically Lean™ contains GreenSelect® Phytosome, a patented and clinically tested Green Tea extract that has been shown to have superior bioavailability.\* Human clinical studies have demonstrated that GreenSelect® Phytosome can help to support a healthy metabolic rate and aid in weight management when used in conjunction with a well-balanced diet and exercise program.\*

Code P1921 Size 120 Vcaps®

QTY

## Curcumin Phytosome

60 Vcaps®



Supplement Facts	
Serving Size 1 Vcap®	
	Amount Per Serving
Bio-Curcumin Phytosome (Turmeric Root Extract (Curcuma longa)/Phosphatidyl Choline Complex) (Turmeric Phytosome) (Standardized to min. 18% Curcuminoids - 90 mg)	500 mg*

\* Daily Value not established.

Other ingredients: Rice Flour, Cellulose Powder, Cellulose (capsule), Magnesium Stearate (vegetable source) and Silica.

Contains soy derivative. Contains no sugar, salt, yeast, wheat, gluten, milk, egg, shellfish or preservatives.

Vegetarian/Vegan Product.

Vcaps® is a registered trademark of Capsugel.

Curcumin, the active component in Turmeric, has been demonstrated to support joint mobility and flexibility, as well as support a balanced immune and inflammatory response due to its effects on the COX-2 enzyme and antioxidant potential.\* However, in spite of all these advantages, due to its hydrophobic quality, most forms of Curcumin lack bioavailability. Curcumin Phytosome provides Curcumin complexed with Phosphatidylcholine that clinically demonstrates increased absorption and bioavailability, delivering more of the benefits of this bioactive compound as compared to standard Curcumin extracts.\*

Code P4642 Size 60 Vcaps®

QTY

\*These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease.

Code	Products	Size	Profes.	Retail	Qty.
P0105	5-HTP 100 mg	90 Vcaps®			
P0108	5-HTP 200 mg + Glycine, Taurine and Inositol	60 Vcaps®			
P3022	7-Keto 100 mg <b>NEW!</b>	60 Gels			
P1811	A - Biotic™ Enteric Coated, Potent	60 Gels			
P0076	Acetyl-L-Carnitine 500	100 Vcaps®			
P3344	Adrenal Cortisol Support™	90 Vcaps®			
P3032	AHCC® 500 mg	60 Vcaps®			
P3282	Aller-All™ Seasonal Support	60 Tabs			
P3036	Aloe Vera 5,000	100 Gels			
P3042	Alpha Lipoic Acid 250 mg	90 Vcaps®			
P3046	Alpha Lipoic Acid 600 mg Plus	60 Vcaps®			
P3320	Antioxidant ProExtracts <b>NEW!</b>	60 Vcaps®			
P2958	BioCore® Enhanced Enzymes	90 Vcaps®			
P0471	Biotin 5000 mcg	90 Vcaps®			
P1228	Bone Strength™	180 Caps			
P1720	Borage/GLA 1050 mg	60 Gels			
P3303	Brain Regain™	60 Vcaps®			
P2943	Bromelain 2400 gdu/500 mg	90 Vcaps®			
P3308	C.Away™	90 Vcaps®			
P1675	CardioTri-Plex™	120 Gels			
P0072	L-Carnitine 500 mg Carnipure®	60 Caps			
P9470	Celadrin® Tabletop Display	12 Bottles			
P1415	ChromeMate® 200 mcg	90 Caps			
P1731	CLA Away™	90 Gels			
P1921	Clinically Lean™ <b>NEW!</b>	120 Vcaps®			
P0405	CoEnzyme B Complex	60 Tabs			
P3182	CoQ10 600 mg Softgels	60 Gels			
P3198	CoQ10 400 mg Softgels	60 Gels			
P3196	CoQ10 200 mg Lozenges	60 Loz			
P3208	CoQ10 100 mg Softgels	90 Gels			
P3163	CoQ10 60 mg + Fish Oils	90 Gels			
P3186	CoQ10 Liquid 100 mg/tsp	4 oz			
P4638	Curcumin 665 mg 95% Extract	60 Vcaps®			
P4642	Curcumin Phytosome <b>NEW!</b>	60 Vcaps®			
P3121	D-Flame™ Cox-2 Formula	90 Vcaps®			
P1612	DHA-500 <b>NEW!</b>	120 Gels			
P2956	Dairy Digestion™	90 Vcaps®			
P4704	EGCg 400 mg/50%	90 Vcaps®			
P2921	E.N.T. Biotic™ Chewable Probiotic <b>NEW!</b>	60 Loz			
P2963	Enzymes-HCl™	120 Caps			
P5993	Fiber O-3™	16 oz			
P1770	Flax Seed Oil 1000 mg Organic	120 Gels			
P0498	Flush Free Niacin 500 mg	90 Vcaps®			
P4683	Ginkgo Biloba 120 mg/24% Plus	100 Vcaps®			
P3318	Glucose Balance™	90 Caps			
P3170	Gluc/Chond/MSM Caps	90 Caps			
P3172	Gluc/Chond/MSM Caps	180 Caps			
P3243	Gluc/Chond 2 per day, Extra Strength	120 Tab			
P3130	Gluc & MSM, Vegetarian 1000 mg	120 Vcaps®			
P3175	Liquid Glucosamine, Chond, MSM	16 oz			
P0094	L-Glutamine 1000 mg	120 Caps			
P0225	Glycine Powder, Free Form <b>NEW!</b>	1 lb			
P3274	Grape Seed OPC 250 mg Extract	90 Vcaps®			
P4714	Hawthorne Extract 600 mg <b>NEW!</b>	60 Vcaps®			
P3055	Immune Renew™ (Org. Mushrooms)	90 Vcaps®			
P3134	Joint-UC™ Collagen	60 Vcaps®			
P1625	Krill Oil, Neptune (NKO®) 500 mg	60 Gels			
P2448	Liver Detox™	90 Caps			
P3062	LYC-O-MATO® 20 mg Lycopene	60 Gels			
P1298	Magnesium Citrate <b>NEW!</b>	180 Gels			
P2810	D-Mannose Urinary Powder <b>NEW!</b>	3 oz			
P2811	D-Mannose Urinary 500 mg	90 Caps			
P3258	Melatonin 3 mg Lozenge + B-6	120 Loz			
P3326	MetaboEnergetics™	90 Caps			
P0497	Methyl B-12 10,000 mcg <b>NEW!</b>	60 Loz			
P0496	Methyl B-12 5,000 mcg + Folic Acid	60 Loz			
P0495	Methyl B-12 1,000 mcg	100 Loz			
P4739	Milk Thistle 300 mg/80% Plus	90 Vcaps®			
P2120	MSM 1,000 mg	180 Caps			
P0085	NAC N-acetyl cysteine 600 mg + Antioxidants	100 Caps			
P3140	Nattokinase 100 mg/2000 FU units	60 Vcaps®			

P1659	Omega-3 Lemon Liquid /Molec Distilled	7 oz			
P1656	Omega-3/Enter 180/120 /Molec Distilled	90 Gels			
P1657	Omega-3/Enter 180/120 /Molec Distilled	180 Gels			
P1661	Ultra Omega-3 500/250/Molec Distilled	90 Gels			
P1662	Ultra Omega-3 500/250/Molec Distilled	180 Gels			
P3281	Ortho Detox™	90 Vcaps®			
P2912	Ortho Dophilus™ 8 Strains, 4 Billion	60 Vcaps®			
P0950	Ortho-E™ NON-GMO	60 Gels			
P3772	Ortho Liquid Multi™ - Iron Free/Orange	16 oz			
P3774	Ortho Liquid Multi™ Superfruits - Iron Free/Berry <b>NEW!</b>	16 oz			
P3816	Ortho Multi™ Softgel w/ Flax 400 mg	90 Gels			
P3788	Ortho Multi™ Greens	180 Vcaps®			
P3878	Ortho Multi™ for Men Vcaps®	90 Vcaps®			
P3875	Ortho Multi™ for Men Tabs	90 Tabs			
P3798	Ortho Multi™ for Women Caps	120 Vcaps®			
P3796	Ortho Multi™ for Women Tabs	90 Tabs			
P3340	Ortho Prostate™	90 Gels			
P3368	Ortho Thyroid™	90 Vcaps®			
P1413	OsteoBoron® 3 mg, Natural Form/base	90 Vcaps®			
P0487	Pantethine 300 mg Co-enzyme A	60 Gels			
P4727	Peppermint Oil G.I.™ Enteric	90 Gels			
P3345	PepZin G.I.® Soothe™	60 Tabs			
P2385	Phosphatidyl Serine 100 mg & Ginkgo 60 mg	60 Gels			
P2711	Phyto Fruit & Greens™ Powder, Gluten Free <b>NEW!</b>	10 oz			
P2936	Probiotic-4™ Chewable <b>NEW!</b>	90 Loz			
P3338	Progesterone Cream Pump - 20 mg	3 oz			
P3348	Prostate-B™ <b>NEW!</b>	90 Gels			
P5955	ProtoClear™ Berry Flavor	2.3 lbs			
P5956	ProtoClear™ Info Card & Sample - Berry	25 g			
P5957	ProtoClear™ Orange Flavor	2.3 lbs			
P5958	ProtoClear™ Info Card & Sample - Orange	25 g			
P5960	ProtoClear™ Vanilla Flavor	2.3 lbs			
P5961	ProtoClear™ Info Card & Sample - Vanilla	25 g			
8931	ProtoClear™ Premium Shaker Cup	12 oz			
P2928	ProtoDophilus™ 50 Billion/Cap <b>NEW!</b>	50 Vcaps®			
P5963	ProtoMeal™ Chocolate Flavor (Whey) <b>NEW!</b>	2.2 lbs			
P5963S	ProtoMeal™-Choc. Sample (Whey) <b>NEW!</b>	25 g			
P0716	ProtoSorb™ C 500	100 Vcaps®			
P0726	ProtoSorb™ C 1000	100 Tabs			
P2957	ProtoZymes™ <b>NEW!</b>	90 Loz			
P3321	Red Yeast & CoQ10 30 mg, ALA	90 Vcaps®			
P3500	Red Yeast Rice Extract 600	90 Vcaps®			
P3353	Resveratrol 200 mg Extra Strength	60 Vcaps®			
P2147	D-Ribose Powder, Bio Energy Pure	300 g			
P0138	SAME 200 mg Enteric + B Complex	60 Tabs			
P4756	Saw Prostetto™ 320 mg/85-95% Extract	90 Gels			
P1485	Selenium 200 mcg, Yeast-Free	90 Vcaps®			
P2954	Serrazimes® 33 mg/20,000 units	90 Vcaps®			
P1905	Slimaluma® Plus	60 Vcaps®			
P6957	Stevia Complete Packets	100/box			
P6955	Stevia Non-Bitter Liquid, Sweet	2 fl oz			
P6960	Stevia Non-Bitter Powder, Sweet	1 oz			
P4760	St. John's Wort Mood Caps <b>NEW!</b>	100 Vcaps®			
P3507	Sytrinol® Cholesterol Formula	60 Vcaps®			
P0142	Taurine 1000 mg Caps	100 Caps			
P3380	True Balance™ Multi	120 Caps			
P0166	L-Tryptophan 500 mg	60 Vcaps®			
P0167	L-Tryptophan 500 mg	120 Vcaps®			
P0169	L-Tryptophan 1000 mg	60 Tabs			
P3145	Ubiquinol CoQH-CF™ 50 mg	60 Gels			
P3142	Ubiquinol 100 mg <b>NEW!</b>	60 Gels			
P3123	Vein Integrity™ with Trunorin®	90 Vcaps®			
P2168	Virility For Men with LJ100®	60 Vcaps®			
P0452	Vitamin B-12 Liquid Tri-Formula 5,000 mcg	4 oz			
P0690	Vitamin C-1000 Cap+100 Bioflavonoids	120 Caps			
P0374	Vitamin D-3 10,000 IU <b>NEW!</b>	90 Vcaps®			
P0370	Vitamin D-3, Liquid 5000 IU	2 oz			
P0372	Vitamin D-3 5000 IU	120 Gels			
P0367	Vitamin D-3 2,000 IU	120 Gels			
P0365	Vitamin D-3 1,000 IU	120 Gels			
P0357	Vitamin D-3 1,000 IU Chewable <b>NEW!</b>	180 Loz			
P0381	Vitamin D-3 & K-2 Liposomal Spray <b>NEW!</b>	2 oz			

## Sweet Relief

Protocol For Life Balance Stevia Extract is a **zero-calorie**, low glycemic, 100% natural sweetener that makes a perfectly healthy substitute for table sugar and artificial sweeteners. Unlike chemical sweeteners, Protocol For Life Balance Stevia contains pure Stevia extract; easily-utilized by the body and metabolized in the same way nutrients are. With a taste that is naturally 200-300 times sweeter than refined sugar, a tiny amount is all it takes to sweeten your favorite beverages, foods and desserts! Not all Stevia is the same, though. Protocol For Life Balance takes special measures to preserve Stevia's natural qualities to make ours the best-tasting, purest Stevia available.

Protocol For Life Balance Stevia utilizes the whole leaf extract to retain the pure sweetness in real Stevia, as opposed to other products containing only isolated fractions such as Reb A. We treat our Stevia with a special enzymatic process that results in a clean, superior tasting sweetener. Our attention to quality guarantees freshness in every serving and gives Protocol For Life Balance Stevia a well-rounded sweet taste that is very close to pure sugar, without the calories or guilt.



- Liquid Stevia Extract
- Base of Water & 11% Alcohol
- Dropper Dispenser

Code P6955



- Potent White Herbal Extract
- Serving Scoop Enclosed
- 622 Servings!

Code P6960



- Potent White Herbal Extract
- Convenient
- 100 Individual Packets

Code P6957

\*These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease.

April 2011

# The Professional Educator



## April Tradeshows

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