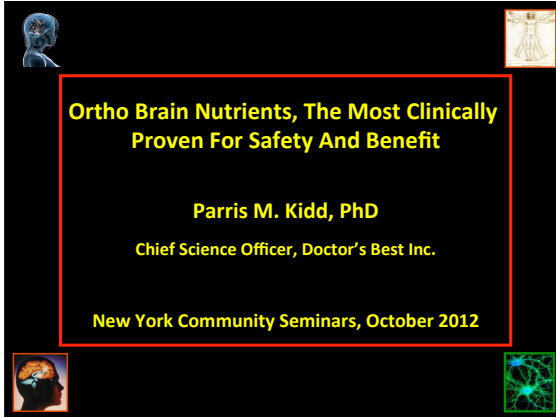


Ortho Brain Nutrients, The Most Clinically Proven for Safety and Benefit

October, 2012



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Parris M. Kidd, PhD
Chief Science Officer, Doctor's Best Inc.

New York Community Seminars, October 2012



Doctor's Best Product Philosophy

Highest quality, branded raw materials

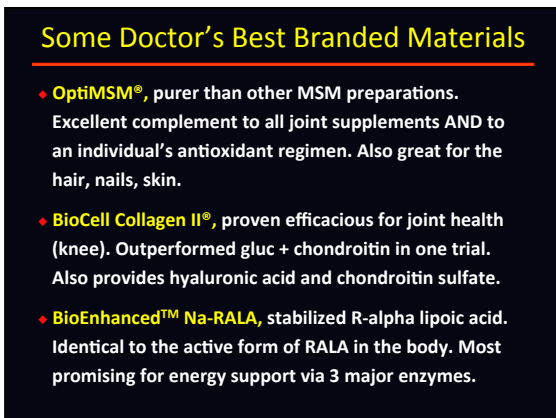
Full potency finished products

Full regulatory compliance

No compromise on safety

Full label disclosure

Affordability



Some Doctor's Best Branded Materials

- ♦ **OptiMSM®**, purer than other MSM preparations. Excellent complement to all joint supplements AND to an individual's antioxidant regimen. Also great for the hair, nails, skin.
- ♦ **BioCell Collagen II®**, proven efficacious for joint health (knee). Outperformed gluc + chondroitin in one trial. Also provides hyaluronic acid and chondroitin sulfate.
- ♦ **BioEnhanced™ Na-RALA**, stabilized R-alpha lipoic acid. Identical to the active form of RALA in the body. Most promising for energy support via 3 major enzymes.

Doctor's Best Branded Materials, cont'd

- ♦ **Tryptopure™**, from legendary amino acid maker Ajinomoto. Surpasses US, European, Japanese pharma purity criteria. Imported into the U.S. without interruption for over 25 years.
- ♦ **BioEnergy Ribose™**, for energy and metabolic support, especially for the muscles and heart. Doses 5 grams and over are needed, making cost a major consideration.
- ♦ **Curcumin Phytosome Featuring Meriva®**, a combination of curcumin w/PC (PhosphatidylCholine). Proven in 4 clinical trials published in peer-reviewed journals.

Doctor's Best Branded Materials, cont'd

- ♦ **MHC-Cal™**, the calcium form proven most effective for building bone. Most closely mimics human bone because it is made from bone. Used in our breakthrough product **Calcium Bone Maker Complex**.
- ♦ **Mena-Q7™**, optimally effective vitamin K2. A far better supplement form than K1, and the most effective of all the K2 forms. Also involved in mitochondrial energy generation. Important in **Calcium Bone Maker Complex**.
- ♦ **Quatrefolic®** MethylTetraHydroFolate, the body's most fully active folate. Best substitute for folic acid.

Our Brain: Dynamic, Always Changing

- ♦ The human brain is highly adaptable ("neuroplastic"). It continually remodels its connections in response to changes in the body's internal and external environments.
- ♦ The brain works on connections (called "synapses"), which are its information transfer units. **The 100-1000 trillion synapses can turn over at 5-7 % PER WEEK (in the cortex).**
- ♦ As the informational inputs change, new synapses form. Unused synapses atrophy ("Use them or lose them").
- ♦ To make new synapses requires nutrients. The best clinically proven brain nutrients are also intrinsic to the brain cells — "**ortho nutrients**".

Doidge N. The Brain That Changes Itself. 2007; NY: Viking Press

The Most Clinically-Proven Brain Nutrients

- DHA (DocosaHexaenoic Acid), Omega-3
 - "Fully Active Folate" (Methyl-Tetra-Hydro-Folate, MTHF)
 - SAmE (S-Adenosyl Methionine)
 - NAC (N-Acetyl Cysteine) + Selenium + Molybdenum
 - Brain Magnesium (Magnesium Threonate)
 - Carnitine (L-Carnitine)
 - PS (PhosphatidylSerine), membrane phospholipid
 - GPC (GlyceroPhosphoCholine), water-phase phospholipid
- All these are **ortho nutrients**, per Linus Pauling's concept

DHA Is Practically A Vitamin

- **DHA proven essential** for brain, eye and heart development. FAO/WHO, US NIH, US NAS, ADA, EFSA, ISSFAL, and US FDA all support its addition to infant formulas.
- **Proven essential for health at every life stage.** The body makes very little on its own, even from EPA.¹ **This makes DHA practically a vitamin.**
- **Body's most abundant omega-3:** 5-10 times higher than EPA and ALA in all the tissues.
- **To ensure DHA status it's necessary to supplement with DHA.**
- **DHA's functional location is within cell membranes.**

¹Arterburn LM. Am J Clin Nutr 2006;83:1467S.

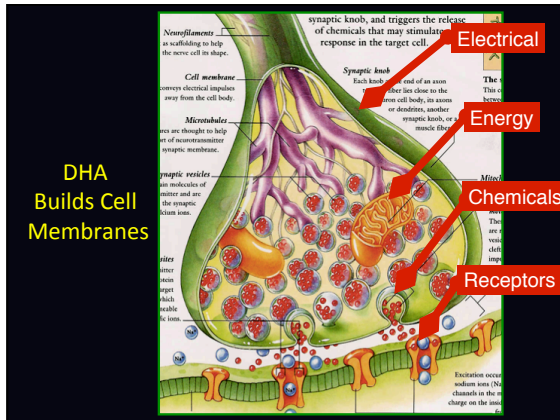
DHA: Lifelong Importance For The Brain

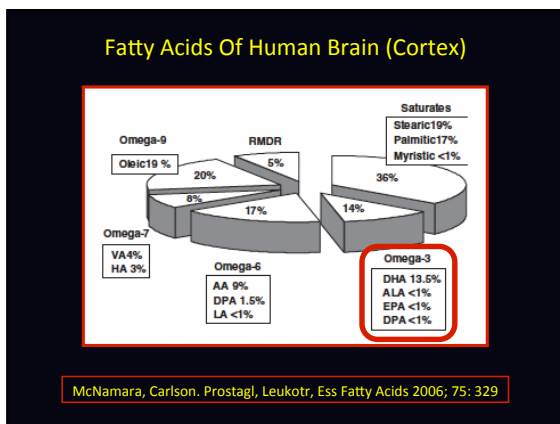
- **Essential for fetal development.** Concentrated in breast milk. **Neonatal deficiency:** lifelong problems with learning, mood, behavior, delusional problems, aggression.¹
- **Maternal deficiency:** linked to postpartum mood difficulties.
- **Deficiency in adults:** problems with memory, mood, stress management, aggressiveness.
- **Pure DHA proven effective for memory,** in 2 double-blind trials with over-55 adults.^{2,3}
- Brain health requires good circulation. **Clinical trials report DHA superior to EPA for circulatory health.**^{4,5}

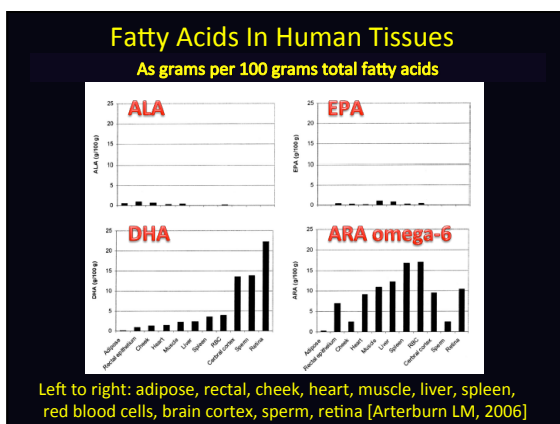
¹McNamara RK. Prostagl, Leukotr, EFA 2006;75:329; ²Yurko-Mauro K. Alz Dement 2010;6:456; ³Sinn N. Br. J. Nutr. 2012;107:1682; ⁴Mori TA. Hypertension 1999;34:253; ⁵Cottin SC. Proc Nutr Soc 2011; 70:215.

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New York community seminars

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Fully Active Folate (FAF)

- Folate is a B vitamin found mainly in leafy green veggies. Since 1998 many US grains are fortified with folic acid.
- Both the food folates and synthetic folic acid must be converted into Methyl-Tetra-Hydro-Folate (MTHF), **fully active folate (FAF)**. Folic acid is NOT readily converted to **FAF**.
- **FAF** provides **methyl** groups ($-\text{CH}_3$) for building DNA, regulating genes, building cell membranes, insulating nerve cells, making chemical transmitters and brain hormones; recycling homocysteine, and many other functions.
- Homocysteine is potentially damaging to the brain and circulation. Raising **FAF** typically lowers homocysteine.

Kidd PM, 2012. Natural Brain Enhancers (Chap 4)

Fully Active Folate (FAF) Supports Mood

- Fully active folate (FAF) needed to make mood transmitters: serotonin, dopamine, and norepinephrine.
- Folate supplementation often improves mood and memory, especially in the elderly.
- People with low folate 6 times less likely to respond to antidepressants.
- In clinical trials, FAF with antidepressants caused more subjects to respond, more rapid mood improvement, greater degree of improvement, fewer side effects.
- Fully active folate synergizes with DHA in pregnant women.

Kidd PM. Fully Active Folate Product Fact Sheet, www.drbitamins.com
Ginsberg LD. Innov Clin Neurosci 2011;8:19

Factors That Deplete Folate

- ❖ Pregnancy; advancing age.
- ❖ Smoking, drinking, **COFFEE (>4 cups/day)**, junk food, dieting.
- ❖ **Mutation C677T in methylenetetrahydrofolate reductase** impairs MTHF conversion mainly in Caucasians, "Hispanics," Puerto Ricans). Can cause developmental delay, also numerous neurologic and cardiovascular abnormalities.
- ❖ Various **prescription pharmaceuticals can deplete folate**, including some oral contraceptives; anticonvulsants, GI medications, others. Important to know if your prescription drug(s) could be depleting your folate.

Kidd PM, 2012. Natural Brain Enhancers (Chap 4)

Fully Active Folate (FAF) Preferable to Folic Acid

- FAF is preferred by researchers at Massachusetts General Hospital, leading experts on folate and mood.¹
- Unconverted folic acid (UFA) found in 26% of elderly in Germany;² NIH Office of Dietary Supplements reported UFA in 38% of over-60s in the USA;⁴ in 2006 Tufts Univ. reported 78% of postmenopausal women had UFA.⁵
- The Tufts group found a correlation between UFA levels and lowered Natural Killer cell activity in these women.⁵
- In Europe the FAF is being recommended over FA for food fortification.

¹Papakostas GI. Can J Psychiatr 2012;57:406; ²Meloni J. Can Family Physic 2011;57:993; ³Obeid R. Metabolism 2011;60:673; ⁴Bailey RL. Food Nutr Res 2012;56:Epub Apr 12; ⁵Troen AM. J Nutr 2006;136:189.

SAME, Versatile Supernutrient

- SAME (S-adenosyl methionine) is an ultra-high energy nutrient with at least 40 double-blind (DB) trials. It is the main methyl conduit to DNA and the genes ("epigenetics").
- Potent support of healthy mood management (18 DB trials). Also can curb aggressiveness, improve cognitive difficulties.
- Praised in an American Journal of Psychiatry 2010 editorial: "SAME offers a novel mechanism of action and opens up a new area for future exploration." ...Nelson JC, vol. 167:8.
- A key metabolic precursor for glutathione. Proven protectant for the liver, intestines, joints (total 20 DB trials).
- Also can improve energy levels and wellbeing (2 DB trials).

Kidd PM, 2012. Natural Brain Enhancers (Chap 5)



Why Supplement with SAME?

- 1 Exceptionally versatile—feeds into numerous pathways.
- 2 A breakthrough for healthy mood management.
- 3 Highly impressive against inflammation and joint pain. Equals or exceeds the NSAIDS (incl. ibuprofen and celecoxib/Celebrex), and has fewer adverse effects.
- 4 Potent liver protectant. Fundamentally supports liver detox and other functions, by conserving glutathione.
- 5 Improves energy by powering the mitochondria.
- 6 Doctor's Best SAME is the authentic S,S tosylate disulfate form, enterically coated and blister packed to survive the stomach acid and become absorbed in the intestine.

Kidd PM. SAME Product Fact Sheet, www.drbitamins.com

NAC Detox Protects, Detoxifies, Regulates

- ◆ NAC (N-AcetylCysteine) supplies cysteine, the body's major blood antioxidant (l-cysteine is too unstable to be taken by mouth). Cells make glutathione from cysteine as needed.
- ◆ NAC has improved mood management in clinical trials.
- ◆ NAC works with selenium and molybdenum to PROTECT the entire body against stressors.
- ◆ NAC, selenium and molybdenum support an extensive system of overlapping enzyme networks that DETOXYIFY free radicals of oxygen and numerous other toxins. These originate from the mitochondria, from metabolism, lifestyle and environmental toxins, even emotional stress.
- ◆ NAC+selenium+molybdenum support REDOX REGULATION.

Factors That Deplete NAC, Glutathione

- ◆ Aging, alcohol, cigarette smoke; Acetaminophen (Tylenol)
- ◆ Emotional stress, as in medical students studying for exams
- ◆ Industrial chemicals: acrylamide and styrene, used in plastics; octachlorostyrene, from industrial chlorine processing
- ◆ Methacrylates, used in dental fillings and other applications
- ◆ Cement dust; inhaled fibers of various kinds (lung damage)
- ◆ Heavy metals: arsenic, cadmium, lead, mercury; methyl mercury, pollutant; thimerosal, used to preserve vaccines
- ◆ Metabolic stressors, incl. surgery, poor oxygenation from poor circulation or impaired lung function; malnutrition
- ◆ Pesticides paraquat and phosphamidon; PCBs (polychlorinated biphenyls), numerous environmental pollutants
- ◆ Ultraviolet; X-rays, incl. technicians' occupational exposure

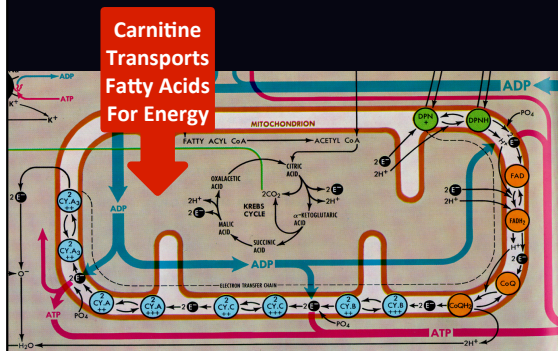
Selenium, Molybdenum Reinforce NAC

- ◆ Selenium (Se) is an essential mineral cofactor for at least 25 "selenium proteins." Some use glutathione for detoxification, others recycle oxidized glutathione.
- ◆ Other Se proteins regulate iodine metabolism and thyroid hormone production; muscle sensitivity to calcium, and healthy immunity. Se proteins also involved in gene regulation, protein synthesis, cell to cell communication.
- ◆ Molybdenum (Mo) is an essential mineral cofactor for 4 enzymes that detoxify sulfites and bisulfites. These substances are in polluted air AND are used as preservatives for foods and even medical products.
- ◆ The Se and Mo protein systems have considerable overlap.

Brain Magnesium

- ♦ Magnesium is required by over 300 enzymes. In the U.S. magnesium deficiency is very common.
- ♦ Magnesium is vital for our cells to make energy.
- ♦ Magnesium Threonate gets more magnesium into the brain than other magnesium supplements.
- ♦ In animal experiments (rats), mag threonate promoted stability and adaptability in the brain synapses.
- ♦ In the rat studies mag threonate also supported learning and memory.
- ♦ I suggest 150 mg magnesium threonate/2 capsules. Take with water and without food.


Powering Mitochondria with Carnitine



L-Carnitine treatment reduces severity of physical and mental fatigue and increases cognitive functions in centenarians: a randomized and controlled clinical trial

Malaguarnera, others. *American Journal of Clinical Nutrition* 2007;86:1738

- ♦ Men and women aged 100-106 years (66 in all) received either carnitine (2 grams/day) or a placebo, for 6 months.
- ♦ Compared to placebo, the carnitine group had statistically significant improvements in total fat (lost 4 lbs) and total muscle (gained 8 lbs), and showed improved walking capacity.
- ♦ Total fatigue, mental fatigue, and fatigue severity improved.
- ♦ The carnitine group also showed superior improvement of cognitive function—from 16.4 to 20.5 points on the MMSE (below 17 points suggests severe cognitive impairment).




Natural Brain Enhancers Featuring GPC and PS*


Ingredients per two capsules:
GlyceroPhosphoCholine (GPC).....300 mg
PhosphatidylSerine (PS).....100 mg

Suggested Adult Use:
Take 1 capsule twice per day between meals, not later than 4 pm.

Suitable for vegetarians

*Better Nutrition 2010 Best Supplement Award, Brain Wellness Category






GPC (GlyceroPhosphoCholine)^{1,2}

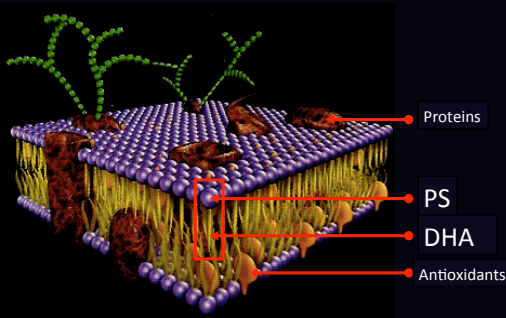
- Like PS and DHA, abundant in breast milk.
- Unique protective nutrient for the brain (clinical experience with over 3,000 patients). Helps **NGF (nerve growth factor)** support brain cell repair and renewal.
- Supplies the brain with **choline to make acetylcholine**.
- Promotes healthy attention in young adults.
- Promotes healthy mental performance at all ages.
- Supports cognitive function in the elderly.
- Supports the brain's daily **growth hormone** release.

¹Kidd PM. GPC, Mind-Body Nutrient. 2007; Total Health, Utah

²Parnetti L. J Neurol Sci 2007;257:264



PS Positions DHA In The Membrane



How To Take These Brain Nutrients

- **DHA 500 from Calamari:** 1 softgel daily, after a meal; 2 softgels for added protection; maximum 4 softgels per day.
- **Fully Active Folate:** 1 veggie cap daily, between meals; 2 caps if pregnant, more only if under medical supervision.
- **SAME:** 1 to 4 enteric-coated tablets daily, between meals. DO NOT CHEW THE TABLETS.
- **NAC Detox Regulators:** 1-4 veggie caps daily, with meals.
- **Brain Magnesium:** 1 veggie cap twice daily, with lots of water and without food.
- **Carnitine Energy:** 3 tablets daily, after meals. If on thyroid or anticoagulant medications, consult your physician.
- **Natural Brain Enhancers (PS + GPC):** 2 veggie caps after a small meal, before 4 pm; maximum 8 caps per day.

Outline Of A Brain Conservation Program

- Avoid prolonged emotional stress. It kills brain cells.
- Meditate. Reduces anxiety, helps with spiritual growth.
- Avoid toxins from "lifestyle"; air, water, and food; home, workplace, school; all contribute to **TOTAL TOXIC LOAD**.
- Add an integrative physician to your health team.
- Keep upgrading your diet, take supplements.
- Monitor your medications-ask your pharmacist.
- Do challenging mental exercise. Try www.positscience.com.
- Get physical exercise: sweat at least 30 mins, 4-5 times/week.
- Stay socially engaged. Stay in touch with good friends.

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Resources

- ♦ My 2012 booklet **Natural Brain Enhancers**, available from Doctor's Best Inc.
- ♦ Podcasts and audios of radio shows, available for download at www.drbrvitamins.com, the Doctor's Best website.
- ♦ You can also download a fact sheet for each of these supplements, complete with the primary scientific sources.
- ♦ I've published numerous scientific reviews on the brain in **Alternative Medicine Review**, www.altmedrev.com
- ♦ **The Brain That Changes Itself**, by N Doidge (2007), is a very readable and highly informative book.
