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Editorial

21st Century Safer, Effective Nutritional Supplements to Enhance Health

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Abbreviations: VOCs: Volatile Organic Chemicals; POPs: Persisting Organic Pollutants; PC: Phosphatidyl Choline; MCT: Medium Chain Triglycerides

Introduction

Personalized, predictive, proactive, primary prevention practices promote long and short-term quality of life. In the 21st century full function supplements are required for good health. The decrease in essential nutrients in the food supply coupled with the increases in environmental and personal stress mean that without regular and intensive supplementation, people progressively become deficient in multiple needed nutrients affecting the body in numerous ways-ranging from causing a decline in cognitive health to increasing overall inflammation and therefore burdening the immune system [1]. From antioxidants to essential minerals, from vitamins to cofactors most people pay a biological tax because their cells are hampered by lack of nutrients that must be taken in because they cannot be made inside the person. This is true for all cellular organisms. This thesis is briefly reviewed here [2,3]. It is important to eat a diet that can be digested, assimilated, and eliminated without immune burden. It is also important to stay well hydrated, to make restorative sleep a priority and to ambulate or exercise daily in ways you enjoy. In addition, personalized supplementation based on predictive biomarker tests are recommended. If wellness, holistic health, integrative functional health, and healthful caring are of value, read on. Recent headlines and some news stories conclude that supplements are not helpful and may even cause harm. Reports such as these disregard other data that safer, more active and bioavailable supplements are needed, often at relatively high dose, because of today's total or allostatic toxin and stress load in which people marinate today. Toxins are oxidative stressors. There are five classes: volatile organic chemicals (VOCs), persisting organic pollutants (POPs), toxic minerals, mold products and radioisotopes. All five are increasing substantially in human habitats. They are all anti-nutrients in that they cause the body to use up protective molecules to prevent these toxins from wreaking havoc at the cellular level. Prudence and evidence support individualized sufficient supplementation. When the negative reports about supplements are studied carefully, important observations can be made. We suggest a synthesis after reporting the antithesis. Negative reports are all based on the commercially common 'work-a-like' synthetic version that we, too, suggest are better avoided. Examples include:

All eight mixed natural forms of vitamins E (tocopherols and tocotrienols) along with selenomethionine are heart, blood vessel, and stroke protective. In contrast, the criticized d-alpha tocopherol succinate or acetate has long been known to have no benefit to heart health and at higher intake dilutes heart-healthy gamma tocopherol form [4-8].

All eight natural forms of folate Rather than synthetic folic acid are more helpful and lower risks in nerve development in fetuses as well as improved nerve function through old age [9]. Anti-acid medications, anti-inflammatory, anti-hypertensive and anti-biotic medications increase the need for folate as part of B complex [10].

Balanced bio-identical B Complex vitamins and other essential nutrients work as an effective team. Use of high dose individual nutrients tested as pharmaceuticals have generally failed. [11-14].

Mixed carotenoids than isolated high dose beta-carotene, offer wide-ranging health benefits, from the glands to the brain because different locations in the body require slightly different forms of antioxidant carotenoid protection [15,16].

Fully buffered and reduced l-ascorbate just plain, synthetic "vitamin C," l-ascorbate protects and recycles the body's connective tissue infrastructure while recycling many other antioxidants from vitamin E to glutathione, taurine to alpha lipoic acid and protects critical cell structures and the mitochondria cell battery from oxidative damage. Synthetic vitamin C is cheap to

produce, however, half of it is not absorbed (d-ascorbate) and can build up to irritate the intestines. Produced in air rather than under a nitrogen blanket, synthetic ascorbate can be damaged (oxidized) during production [17,18].

Low molecular weight improves bioavailability

Quercetin dihydrate is the preferred flavonoid and soluble, low molecular weight ortho (oligomeric) proanthocyanidins (OPCs) is the preferred flavanol. This is in contrast to the quercetin forms that are essentially insoluble, have low bioavailability and are potentially immunogenic [19].

A vital part of safer, more effective nutrient supplementation is the method of nutrient delivery, particularly in relation to functional uptake known as bioavailability.

Micellization

This technique transforms the nutrient bulk into tiny particles (inverted micellar nanodroplets) with the help of phosphatidylcholine (PC) and medium chain triglycerides (MCT). While a rare and expensive method, it increases absorption of the nutrient by 3-5 times [20]. This is a process that can be used to increase the bioavailability of nutrients like CoQ10, essential fats, Vitamin D3 and others [21-23].

Nitrogen Blanket

Essential fats like EPA and DHA that are molecularly distilled under a nitrogen blanket are preferred since this process removes toxins like mercury and other heavy metals protecting the delicate unsaturated fats from oxidative damage during production. This similar process can also be used to ensure reduced vitamin C and prevent its oxidation [24].

Tabsules™

In products that cannot be micellized, increased efficacy of nutrients through a tablet can be achieved by keeping fillers and binders to a minimum. Binders and fillers are what make tablets notorious for not being absorbed well and breaking down in the body slower. One can hope to get a capsule like efficacy through a tablet especially using fiber in the form of croscarmellose as opposed to other cellulose forms [25].

With the current load of toxins in our environment, this is the time to invest in functionally superior and safer, more evidence-based natural products, produced in a more effective, more bioavailable manner that can neutralize the effects of toxins today and reduce disease risk of tomorrow. 21st century health promotion starts with what people eat, drink, think and do including personalized, sufficient supplementation [26-29].

Conclusion

Take sufficient safer, effective supplements based on biochemical individuality along with a wide variety of immune tolerant foods. This removes obstacles to recovery due to essential nutrient deficits. Make sure that safer more effective processes of nutrient bioavailability are used to ensure better and synergistic benefits.

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