



## VITAMINS AND MINERALS

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Nutritional surveys consistently show that most people eating the Standard American Diet are deficient in many vitamins and minerals. Some of the common deficiencies have major consequences. Folic acid deficiency, for example, greatly increases the risk of birth defects and adult male heart attacks. Magnesium deficiency causes a wide range of noticeable problems, and is very common, as is Vitamin D deficiency. Vitamin B12 deficiency (associated with low stomach acid) causes severe neurological injury which is often irreversible. Many experts suggest every American should be taking a good quality multivitamin with minerals.

That being said, other studies suggest that the overwhelming majority of over the counter vitamins and minerals either do not contain what they claim to contain, or contain it in a biologically inactive form or combined with potentially-toxic materials. Consequently, we have identified a number of vitamin companies whose products are free of such concerns, and are able to help our patients obtain them.

Vitamins and minerals are even more important for persons with environmental illness, who, by definition are sick because their detox systems have been overwhelmed. Many vitamins and minerals are cofactors for the various detox enzymes, and get depleted when the detox system has a lot of work to do. Replacement is necessary in order to get the detox system back on its feet, and also to improve energy production because that process uses many of the same cofactors.

Individuals with genetic abnormalities sometimes need unusually high doses of specific vitamins or minerals. There are tests we can do, either of the genes specifically, or of the metabolic byproducts of metabolism, which give us insight into where these abnormalities might be, how severe they might be, and what it will take to get them running properly. We run these tests when individuals don't respond as well as expected to routine doses of vitamins and minerals, because some people require unusually high doses of one or more cofactors to overcome their genetic defect in enzyme function.

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