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## REVIEW

## Diet, Supplements, Exercise and Sauna

In Methyl Magic, Craig Cooney's most radical suggestion is that half of our calories should come from vegetables and fruit. "Vegetables should be your top priority," Cooney states. He grudgingly allows some potatoes, as long as they comprise no more than ten percent of our vegetable intake. This very strong emphasis on vegetables, as opposed to the fattening starches recommended by the USDA pyramid, is also known as "the California pyramid."



Cooney also allows some fruit juice, as long as it is diluted with water, since fruit juice contains a lot of sugar. Diluted grape juice and orange juice is recommended, since they contain choline and folic acid, respectively, as well as other phytonutrients. He is also strongly in favor of beans—even canned beans are a good source of folate. Likewise, he is in favor of seafood and good fats, such as those provided by nut butters. In general terms, his diet is broadly compatible with The Zone, and probably would also accomplish the purpose of insulin reduction. This is an important anti-aging bonus.

Basically, however, we can't rely on the diet to provide us sufficient amounts of methylating agents. For anyone middle-aged or beyond, supplements are a must. Here is a brief summary of the methyl supplements recommended by Cooney:

choline and trimethylglycine. While choline does contain three methyl groups, for methylation purposes it needs to be converted to trimethylglycine (TMG), which in turn is a very efficient methylator. Choline has many vital functions in the body, including serving as a precursor for the production of the neurotransmitter acetylcholine. One animal study indicated that coffee strongly potentiates the action of choline in raising the levels of acetylcholine.

TMG, on the other hand, is very effective at raising the levels of SAME and lowering homocysteine. Seafood, beets and spinach contain TMG, but for the methyl-deficient older people, supplements are highly recommended. Interestingly, moderate alcohol intake together with TMG can result in higher levels of SAME than TMG alone.

Methionine is the dietary amino acid that is the precursor of SAME. Too much methionine, however, can result in elevated homocysteine, particularly if methyl nutrients are insufficient. Unfortunately we do not know the optimal levels of methionine in relation to the levels of methylators such as folic acid. Cooney strongly warns against taking methionine supplements, especially if you regularly eat meat and other animal protein. Taking methionine in addition to eating meat could lead to abnormally high methionine levels, with resulting higher SAME but also high homocysteine, with both compounds rising and falling in spikes.

Cooney is particularly concerned about body builders who use protein mixes, and hence are in effect supplementing methionine. Possibly taking methyl supplements with methionine might make methionine supplementation safe, but we simply do not know what doses of methyl supplements it would take.

- Folic acid and vitamin B12 are vital for remethylating homocysteine back to methionine. A coenzyme form of vitamin B12, methylcobalamin, is necessary for the enzyme methionine synthase, which catalyzes the methylation of homocysteine to methionine.
- Vitamin B6 (pyridoxine) helps convert homocysteine to cysteine. Cooney warns that too much B6 (over 200mg) may result in too much conversion to cysteine rather than methionine, and consequently in impaired methylation.
- Selenium participates in methylation as selenomethionine. Animal studies have shown that selenomethionine raises the levels of SAME.
- Zinc is part of various enzymes that help methylate homocysteine. The enzyme DNA methyltransferase also contains zinc.

- Inositol facilitates the action of many methyl agents.
- SAmE??? Cooney has chosen not to discuss using SAmE, which seems to be the hottest new supplement on the market, one with tremendous promise. We know it can improve mood and cognition while helping reverse arthritis, liver disorders and many other problems. If there is a second edition of this book, I hope it includes "SAmE magic." For now, those who wish to try SAmE should know that it should be taken with methyl supplements. The reason is that part of SAmE gets converted to homocysteine as part of a continual cycle.

If you wish to keep your supplements to a minimum, Cooney suggests folic acid, B12 and TMG. These are particularly efficient at supplying methyl groups for the conversion of homocysteine to methionine and SAmE.

Cooney admits that we do not have enough data to work out either optimal doses of supplements or an optimal diet. At this point what we have is educated guess es. One of his most intriguing suggestions is that food could be engineered to contain much greater amounts of beneficial nutrients.

Cooney also states that moderate exercise is important for better methylation. He too warns against strenuous exercise such as marathon running, which has been found to decrease the levels of choline, among other things. Moderate exercise, however, is vital for improving circulation. Good circulation, in turn, insures better handling of homocysteine. Cooney recommends exercise that is sufficiently vigorous to make a person sweat, and one that alternately dilates and constricts blood vessels in the extremities. Sauna followed by cooling down has a similar effect. Cooney mentions that massage likewise enhances circulation. Exercise also helps us stay slender. In general, the lower the body mass index (BMI), the lower the homocysteine.

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