

**“HEALTH FOOD INDUSTRY MYTHOLOGY: You Need  
the Truth About B12 Supplements.”**

RE: cyanocobalamin vs. methylcobalamin

- a. The most biologically active form of vitamin B12 is neither cyanocobalamin nor methylcobalamin. The most active form of vitamin B12, and the form found in foods, is hydroxocobalamin. However, you will never find hydroxocobalamin in a nutrition supplement made by an honest company. The reason is that hydroxocobalamin is completely unstable when put in a tablet or capsule, and can only be taken by injection. Hydroxocobalamin is the form of vitamin B12 used for patients with pernicious anemia or other pathologies that need megadoses of vitamin B12 --- and it is only given by injection.
- b. Cyanocobalamin vs. methylcobalamin makes an interesting comparison. Methylcobalamin is slightly more biologically active than cyanocobalamin, and is retained in the body slightly better. However, methylcobalamin is not well absorbed when taken orally, yet cyanocobalamin is. The very slight superiority of methylcobalamin over cyanocobalamin once it is in the body is completely negated by cyanocobalamin's superior absorption. The companies that put methylcobalamin in their supplements and make a big deal about it being a better quality than cyanocobalamin never tell you that all the studies showing its superiority were done by injected methylcobalamin, not oral methylcobalamin. To benefit from methylcobalamin taken orally, several thousand additional micrograms per day must be taken to equal the benefit of cyanocobalamin.
- c. Cyanocobalamin is by definition vitamin B12. Methylcobalamin is not a “superior” vitamin B12, it is merely vitamin B12 with a methyl group attached. That molecule thus functions not only as vitamin B12 but as a methyl donor in transmethylation reactions. Methylcobalamin has become popular in the health food industry because, as a methyl donor (not because of its vitamin B12 activity), it participates in the metabolism of homocysteine, one of the villains in cardiovascular disease. But, as stated above, the absorption of methylcobalamin is woefully inferior in comparison to cyanocobalamin.

ADDENDUM: Regarding the ridiculous notion that vitamin B12 as cyanocobalamin is a potential source of cyanide poisoning:

1. There has arisen in the health food industry a scare campaign implicating cyanocobalamin (which is by definition vitamin B12) as potentially causing cyanide poisoning. Please be assured that you could

swallow an entire truckload of cyanocobalamin capsules and not experience any ill effects from the cyanide it contains.

2. As explained above, cyanocobalamin is the only complete form of vitamin B12 that is well absorbed when taken orally.
3. Cyanocobalamin has the additional advantage of being the only form of vitamin B12 that can be converted by the body to all the different biologically active forms of vitamin B12 for which the body has numerous uses.
4. The trace of cyanide that stabilizes the vitamin B12 in cyanocobalamin makes up only 2% of the molecule's mass. So, even a 1000 mcg megadose of vitamin B12 contains only 20 mcg of cyanide. To put that in perspective: ordinary drinking water (both tap and spring water) can easily supply ten times that amount per day; a single serving of lima beans (per Health Canada) can supply as much as 300,000 mcg of cyanide --- 15,000 times the amount in a cyanocobalamin megadose.
5. Clearly, the infinitesimal trace of cyanide in vitamin B12 is a totally insignificant quantity as far as toxicity is concerned. --- In fact --- cyanocobalamin is so completely nontoxic and so easily eliminated by the kidneys, that the antidote for true cyanide poisoning is the injectable form of vitamin B12 hydroxocobalamin. The injected hydroxocobalamin combines with the cyanide to form cyanocobalamin --- which is completely non-toxic and is quickly eliminated by the kidneys.
6. So --- you see how NUTRI-SPEC replies to doctors who challenge us over why we, "do not explain that cyanocobalamin has cyanide in it." --- First, there is no need to explain the presence of cyanide in the molecule because it is already stated in the name of the molecule itself. And of course, there is no point even discussing the presence of the cyanide, since it is, 1) totally nontoxic, and 2) it is the very factor that makes cyanocobalamin such a universally biologically active form of B12 supplementation.