

Pollution Effects Mitigated by B Vitamins — Maybe



By Ruth Kava — April 20, 2017



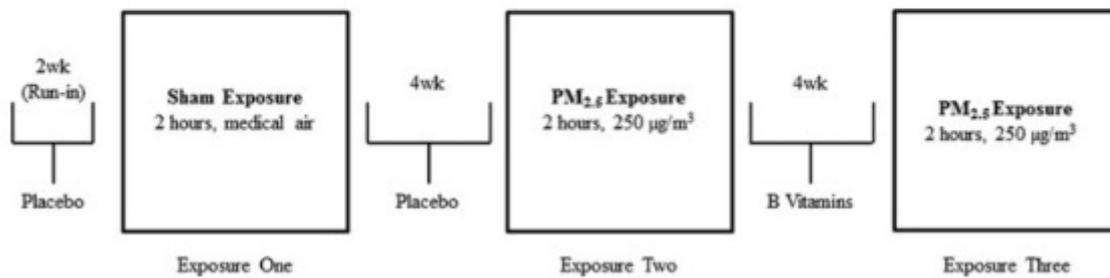
Face Mask to Protect Against Air Pollution, courtesy, Shutterstock [1]

It's a given that the vitamins are necessary for life; but over the years there have been efforts to demonstrate that they also hold almost magical properties with respect to various diseases and conditions — think Linus Pauling with his theories on vitamin C and cancer or the attempt to show that beta-carotene could ameliorate the effects of smoking on lung cancer (neither of which stood up to scrutiny). And more recently, vitamin D has been seen as a candidate for miracle ingredient — this hasn't panned out either, as we explained [here](#) [2]. Now we've become aware that several B vitamins are being tested to see if they can prevent the effects of air pollution on the cardiovascular system.

The most recent such [study](#) [3] comes from the Mailman School of Public Health at Columbia University in New York. Dr. Jia Zhong and colleagues tested the effects of supplements containing vitamins B6 (pyridoxal), B12 (cobalamin) and folate on the acute reactions of volunteers' cardiovascular systems to exposure to simulated air pollution. It was a small pilot study involving 10 healthy adult volunteers (6 women and 4 men, all 19-49 years old), who were exposed to air containing fine particle (PM 2.5 [the particles were 2.5 microns in diameter]) pollution.

As shown in the **graphic below**, participants were first given a placebo for 2 weeks, exposed to air for 2 hours, again given placebo for 4 weeks, then exposed to the polluted atmosphere for 2 hours, then given the B vitamins daily for 4 weeks and once again exposed to pollution for 2 hours.

Figure 1: Study design: A single-blind, cross-over intervention trial with controlled exposure experiments in ten healthy volunteers¹⁹.



Source: <https://www.nature.com/articles/srep45322> [3]

The investigators measured participants' resting heart rate (HR) and heart rate variability (HRV) as well as white blood cell counts (WBC) as an index of inflammation, prior to, just after, and 24 hours after exposure to the polluted atmosphere. They found, as expected, that exposure to pollution raised HR, and WBC significantly. However, after taking the B vitamin supplements, these effects were attenuated.

What do these results mean for those exposed to air pollution? One can't really tell from this small pilot study. First, only 10 people were involved, and they were from lightly polluted urban areas, according to the authors. In addition, the exposures were short-term, and because vitamin B12 has a long half-life in the body, they could not have an exposure under placebo conditions after the exposure under active supplement exposure. Further, it is certainly not clear what the effects might be on those exposed to heavy pollution — if the effect is real, would it be able to counteract greater pollution? Would it be ethical to expose individuals to a simulated heavily polluted environment?

So, though we may see these results heralded as a reason to take such supplements of B vitamins (especially by vitamin supplement companies), we don't see any benefit until much further work has been done that supports these results.

In the meantime, don't hold your breath.

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[1] <http://Shutterstock.com>

[2] <http://www.acsh.org/news/2015/02/25/vitamin-d-miracle-supplement>

[3] <https://www.nature.com/articles/srep45322>