

# Vitamin E and selenium could reduce mercury toxicity

02/02/2006 - Taking vitamin E and selenium supplements could reduce the toxicity of mercury from fish, indicates an animal study. If replicated in humans, the findings may mean pregnant women could consume more fish, and their babies benefit from more omega-3.

The debate between the benefits of [omega-3](#) intake from oily fish versus the potential toxicity of methylmercury is ongoing, with some researchers claiming that the benefits far outweigh the risks. Omega-3 fatty acids have been linked to better foetal development, cognitive function, and heart health.

Methylmercury (MeHg) is a contaminant found in varying amounts in all fish, and has become such a health concern that a joint FAO/WHO Expert Committee on Food Additives (JECFA) has set a provisional tolerable weekly intake (PTWI) of 1.6 micrograms per kg of body weight.

The new study, published on-line in *Neurotoxicity and Teratology* (doi:10.1016/j.ntt.2005.11.02), divided 75 female rats into five equal groups, each had their normal diet supplement with: nothing (control group), MeHg, MeHg plus [selenium](#), MeHg plus vitamin E, and MeHg plus vitamin E and selenium.

The researchers found that supplementation with both vitamin E and selenium eased the effects of mercury toxicity in the offspring rats.

*"[We] found that when selenium and vitamin E were given together MeHg toxicity in adult rats was reduced, and improved growth, fewer clinical signs of toxicity and longer survival time occurred,"* wrote lead researcher Peter Beyroudy from McGill University in Quebec.

When supplemented with the nutrients independently, neither selenium nor vitamin E showed a significant effect on survival numbers.

The researchers could not identify a specific mechanism, but proposed: *"It is possible that vitamin E has more roles than what is currently known."*

They also suggested that the vitamin was boosting the efficacy of selenium. Previous studies using adult animals had shown that selenium alone could reduce MeHg toxicity.

*"These results suggest that antioxidant nutrients in the diet may alter MeHg reproductive and development toxicity. The underlying and human implications warrant further investigations,"* concluded the authors.

According to the US Environmental Protection Agency one in six pregnant women in the US have blood mercury high enough to cause foetal damage, suggesting that selenium and vitamin E supplements could ease the risk on the 650 000 babies born every year in the US.

The study, despite reporting a positive effect for the antioxidants that deserve closer attention, does have limitations, particularly in terms of the doses used.

The amount of MeHg added to the diets in the intervention groups was 1.25 mg per kg per day, giving a daily mercury intake over a thousand times larger than the weekly tolerable intake recommended by the FAO/WHO.

The level of supplementation was also above the human equivalent – the rates were given 225 IU of vitamin E per kg of body weight. The RDA for an adult human is set at 10 IU, with an upper safe limit of 900 IU.

The US FDA currently recommends expectant mothers to eat no more than two servings of oily fish per week. Most experts believe that current levels are safe.

An alternative to fresh fish could be omega-3 supplements, most of which are subject to contamination tests prior to sale. Omega-3 supplementation of products has been a major growth area in the nutraceutical market. Mintel's [Global New Products Database \(GNPD\)](#) showed 208 omega-3-containing product launches across Europe in 2005.