

Nutrients in the News: Fish oil, magnesium, vitamin D and curcumin

written by Dr. Ronald Hoffman | April 14, 2023



Fish Oil: Remember the bad old days when this was said of fish oil? “This Incredibly Popular Supplement Is Pretty Much Useless, Says Huge New Study.”

While the benefits of Omega-3 supplements were being downplayed, Amarin pharmaceuticals made a big splash with its introduction of prescription Vascepa®, touted as offering 25% additional heart protection over and above statins.

It was even suggested that the purified pharmaceutical-grade EPA in Vascepa® was superior to store-bought fish oil supplements, which contain DHA, and were deemed useless and even counter-productive for heart protection. Amarin went so far as to launch lawsuits against fish oil companies alleging theft of their intellectual property via claims about fish oil supplements.

Fast-forward to this month, when the *American Journal of Clinical Nutrition* published a blockbuster review of the impact of Omega-3s on cognitive wellness.

Entitled “The relationship of omega-3 fatty acids with dementia and cognitive decline: evidence from perspective cohort studies of supplementation, dietary intake, and blood markers”, the researchers looked at the relationship between Omega-3 consumption and brain health in three ways:

First, they followed a group of 1,135 individuals, average age 73, who were enrolled in a six-year study invoking sensitive neuro-imaging to detect the first signs of onset of Alzheimer’s Disease. They found that “*long-term users of omega-3 fatty acid supplements exhibited a 64% reduced risk of Alzheimer’s Disease.*”

Next, they surveyed the scientific literature investigating the relationship of Omega-3 supplementation to cognitive decline. After reviewing 48 studies, comprising 103,651 individuals followed for many years, they found:

“ . . . [a] moderate-to-high level of evidence [that] suggested that dietary

intake of omega-3 fatty acids could lower the risk of all-cause dementia or cognitive decline by ~20% , especially for DHA intake."

Finally, they reviewed evidence linking blood levels of EPA/DHA to protection against dementia. They found that elevated levels of plasma EPA and erythrocyte membrane DHA *"were associated with a lower risk of cognitive decline."*

So robust was the effect, they concluded, that:

"Each increment of 0.1 grams per day of DHA or EPA intake was associated with an 8% to ~9.9% lower risk of cognitive decline."

Typical high-potency fish oil brands deliver 500-800mg of EPA + DHA per gel cap—0.5 to 0.8 grams. Doing the math, might we not expect significant double-digit protection for someone taking even as few as a couple of capsules per day, especially when augmented with a diet rich in Omega-3 rich seafood?

When it comes to brain health, there appears to be a synergy between EPA, which is anti-inflammatory, and DHA, which is now an obligatory ingredient in infant formula to support brain development in newborns.

Magnesium: Higher levels of magnesium intake, too, have been found to critically impact brain health. With definitive medical treatments for Alzheimer's Disease showing only marginal benefits, accompanied by prohibitive costs and a potential for dire side effects, there's a need for simple, safe, low-cost natural interventions. Magnesium deficiency is rampant in the US according to the most recent NHANES survey:

"Substantial numbers of U.S. adults fail to consume adequate magnesium in their diets."

A new study ("Association between magnesium intake and cognition in U.S. older adults") confirms that higher magnesium intake is linked to better brain health, especially in women.

Another study in the *European Journal of Medicine* reviewed healthcare data from 6,001 participants aged 40-73 enrolled in the UK Biobank. It found that higher dietary magnesium intake is related to larger brain volumes and lower white matter lesions.

Consuming over 550 mg of magnesium per day was linked to a roughly one year younger brain than consuming 350 mg or less—which is about the average daily consumption for most people.

Of interest in that study was the observation that vitamin D intake on its own had no impact on dementia risk, but magnesium stood a better chance of arresting cognitive decline when coupled with adequate vitamin D.

Vitamin D: It's been long suspected that vitamin D might play a role in diabetes susceptibility. Many studies have shown that individuals with non-insulin dependent diabetes have lower levels of vitamin D.

But association is not necessarily causation; it's been recognized that overweight individuals—the very persons susceptible to insulin-resistance and subsequent diabetes—sequester fat-soluble vitamin D in their ample adipose tissue. Their low blood levels of vitamin D might not, therefore, be the *cause* of obesity and diabetes, but merely their accompaniment.

Three recent studies sought to clarify the relationship between vitamin D and diabetes. Instead of simply measuring vitamin D blood levels, subjects in the “D2d” study were given either 4,000 IUs of vitamin D per day or a placebo for a period of two and a half years. When subjects achieved a vitamin D level of 40 ng/ml, they were found to be less likely to progress to diabetes.

Aggregating the results of the three studies, it was demonstrated that previous trials casting doubt on the efficacy of vitamin D for diabetes prevention and treatment may have under-dosed participants; moreover, targeting D to achieve blood levels deemed sufficient for impact on blood sugar metabolism—not merely to forestall outright deficiency—may be necessary for diabetic subjects, who tend to be overweight, and require more D.

I've long been convinced that there's no “one-size-fits-all” approach to vitamin D supplementation. Nevertheless, many medical authorities and insurers continue to recommend we forego vitamin D testing as “unnecessary”, for the sake of cost-containment. Penny-wise pound foolish, in my opinion.

Curcumin: Long known as an anti-inflammatory, curcumin has been proposed as a heart-protective supplement. A recent study offers a new perspective on how it might shield blood vessels.

While cholesterol has been fingered as the main culprit in atherosclerosis, not all people with heart disease have high cholesterol; conversely, a significant number of heart attacks occur in individuals with low cholesterol, even those on lipid-lowering drugs. Other factors are clearly involved.

One that's been less acknowledged is infection. Human cytomegalovirus (CMV) is now recognized as a significant contributor to heart disease and stroke. CMV infects more than half of American adults by age 40; while it may be a dangerous infection for babies, children and immune-suppressed individuals, it is most often silent in adults. A recent study shows a strong connection between an asymptomatic carrier state of CMV and atherosclerosis.

Turns out curcumin has strong anti-CMV activity. The above study points out that curcumin inhibited CMV replication in mice genetically-engineered to replicate human atherosclerosis. The reduction in CMV activity tamped down

inflammatory cytokines, resulting in less fat in the liver and reduced atherosclerotic plaque.

Curcumin, already recognized for its antiviral potential, thus joins the suite of nutrients like garlic, fish oil, magnesium and resveratrol that may confer protection against cardiovascular disease.