

The Rehabilitation of Beta-Carotene?

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Are beta-carotene supplements on the way back? In the early 1990s beta-carotene was the darling of supplement purveyors as several observational epidemiologic studies had shown an association between consumption of beta-carotene-rich foods, beta-carotene levels in blood, and reduced risk of some chronic diseases. Mid-decade, though, randomized trials of beta-carotene supplements in smokers not only found no benefit to the pills, but even some slight increases in risk of lung cancer. In addition, there was no protective effect of beta-carotene against heart disease or cancer in non-smokers.

Now, a new report (Grodstein et al., *Arch Intern Med.* 2007;167:2184) suggests that beta-carotene supplements might be useful in protecting against the decline in cognitive function often seen as people age. Since some of the effects of brain aging are thought to be due to oxidative stress, the researchers thought that use of antioxidants such as beta-carotene might help delay the process -- indeed, several observational studies had supported that hypothesis.

Dr. Grodstein and colleagues examined the cognitive performance of nearly 6,000 male physicians who were participants in the Physicians' Health Study -- which began in 1982. About 4,000 had been in the study since its inception, while the rest joined in 1998.

All the recruits were over sixty-five years old when they were given a battery of tests to assess their cognitive status, and the results of those given beta-carotene supplements were compared to the results of those who had taken an inactive placebo.

Beta-carotene had no impact on the cognitive performance of the men who took it for only one year, but long-term users (who had taken the supplements for an average of eighteen years) performed significantly better than the placebo group on tests of verbal memory as well as on a global score that averaged several tests.

Is it time for middle-aged folks to stock up on beta-carotene supplements? Probably not. In an accompanying editorial, psychiatrist Kristine Yaffe noted that there were some methodological problems with this study. For example, none of the participants had been tested for cognitive ability at the beginning of the study, thus it wasn't possible to state with certainty that the beta-carotene supplements had provided any protection.

Dr. Yaffe stated that there was no convincing justification for use of antioxidant dietary supplements to maintain or protect cognitive performance, citing several long-term studies of antioxidants that found no protection against cognitive decline. She expressed concern that high doses of such supplements might have adverse health effects. The take-home message is thus one of caution -- while it is biologically plausible that antioxidants could help with aging-related declines in cognition, such an effect has not been clearly demonstrated.

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