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Vit E may protect male smokers from oxidative stress: study

By Stephen Daniells

17/11/2006- **A diet rich in vitamin E could protect smokers from the oxidative stress linked to cancer development, US-based scientists reported this week.**

"This suggests that while working toward the goal of quitting smoking, which is the very best way to prevent development of smoking-related cancers, it could be helpful to eat a diet rich in vitamin E," said Frederica Perera, senior investigator from Columbia University School of Public Health. *"We don't yet know why this relationship was not found in women, but a good diet is beneficial to health in many ways."*

One in three Europeans are smokers, while the US figure is one in five. Tobacco smoke contains over 4,000 compounds, of which 60 are known carcinogens. The oxidative stress levels of smokers are significantly greater than non-smokers, and as such there is a bigger drain on the levels of antioxidants in the body.

Vitamin E, an antioxidant, actually refers to a group of eight compounds: four types of tocopherols and four tocotrienols. The most common form consumed in the American diet is gamma-tocopherol, while alpha-tocopherol is the form mostly found in supplements.

The present study is unusual, said the researchers, because it measured two different markers in white blood cells drawn from 280 smokers (classified as smoking at least 10 cigarettes a day).

The Columbia researchers, in collaboration with researchers NYU School of Medicine, looked at plasma vitamin E levels, said to be derived from food (for example, certain vegetable oils, nuts, whole grains, fish, green leafy vegetables) - supplement users were excluded - and the quantity of 8-hydroxy-2'-deoxyguanosine (8-OHdG), a marker for oxidative stress.

Perera and colleagues reported that increased plasma alpha-tocopherol levels were associated with lower levels of oxidative damage, according to 8-OHdG levels, but only among men.

"There was a dose-response relationship, in that the more vitamin E we found in the blood of the men, the less there was of this cancer-related biomarker," said Perera.

The data was presented at the American Association for Cancer Research's *Frontiers in Cancer Prevention Research* meeting earlier this week. NutraIngredients.com has not seen the full data.

The researchers also investigated possible interactions between vitamin E and GSTM1, a gene variant known to produce enzymes that efficiently detoxify carcinogens in tobacco smoke. The apparent protective effect of vitamin E was greatest among the men with the GSTM1 gene variant, said the researchers.

A similar effect of vitamin E was not observed in women.

"We all want to know if vitamins help protect us against disease, and measuring their effects in the blood using markers of cellular damage is the most direct way to do that," said Perera. *"But we have a lot of work ahead before we can fully understand the role of antioxidants in the chemoprevention of tobacco-related cancer."*

A diet rich in antioxidants like vitamins C and E, and beta-carotene has been reported to protect certain sub-populations, particularly smokers, against prostate cancer, a disease that is becoming more common, with incidence rates having risen by almost two per cent over 15 years.

Indeed, the Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial, (*Journal of the National Cancer Institute*, Vol. 98, pp. 245-254), and the Alpha-Tocopherol, Beta-Carotene Cancer Prevention (ATBC) study (1998), have both reported protective effects of vitamin E against prostate cancer amongst smokers.

However, the Heart Outcomes Prevention Evaluation (HOPE) Trial (2005) reported that a daily supplement of 400 IU of vitamin E had no effect on either prostate or any other type of cancer.

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