Vitamin D Deficiency Related to Increased Inflammation in Healthy Women

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(PhysOrg.com) -- According to a recent study in the Archives of Internal Medicine, 75 percent of Americans do not get enough Vitamin D. Researchers have found that the deficiency may negatively impact immune function and cardiovascular health and increase cancer risk. Now, a University of Missouri nutritional sciences researcher has found that vitamin D deficiency is associated with inflammation, a negative response of the immune system, in healthy women.

Increased concentrations of serum TNF-α, an inflammatory marker, were found in women who had insufficient vitamin D levels. This study is the first to find an inverse relationship between vitamin D levels and concentrations of TNF-α in a healthy, non-diseased population. This may explain the vitamin's role in the prevention and treatment of inflammatory diseases, including heart disease, multiple sclerosis and rheumatoid arthritis.

"The findings reveal that low vitamin D levels negatively impact inflammation and immune response, even in healthy women," said Catherine Peterson, assistant professor in the MU College of Human Environmental Sciences. "Increased inflammation normally is found in people with obesity or chronic diseases; a small decrease in vitamin D levels may aggravate symptoms in people who are sick."

The results support the need to re-examine the biological basis for determining the dietary reference intake (DRI) of vitamin D, Peterson said. The Institute of Medicine's DRI for vitamin D is 200 IU for people

age 50 and younger and 400 IU for people 50 to 70 years old. The guidelines, created in 1997, are being revised to reflect new research, and Peterson is confident the DRI will be increased.

"Adequate vitamin D levels identified in this study are consistent with recent research that suggests the DRI should be increased," Peterson said. "To improve vitamin D status and achieve its related health benefits, most people should get at least 1000 IU of vitamin D per day. Sunlight is a readily-available, free source of vitamin D. Exposing 25 percent of the skin's surface area to 10 minutes of sunlight three days per week will maintain adequate levels in the majority of people; however, people with darkly-pigmented skin need more. Only a few foods contain vitamin D naturally, such as fatty fish; other sources are dietary supplements and vitamin-D-fortified foods, including milk and orange juice."

In future studies, Peterson will determine the effectiveness of Vitamin D in reducing disease symptoms and reducing blood glucose levels in diabetics. The study, "Serum tumor necrosis factor-alpha concentrations are negatively correlated with serum 25(OH) D concentrations in healthy women," was published in the July, 2008 issue of the *Journal of Inflammation*.

Provided by University of Missouri