

A new study shows that high doses of vitamin D supplementation in African American adults may be needed to meet even minimal recommended blood levels.

Treating vitamin D deficiency in a high risk population living in Northern climates

The African American population is known to have higher rates of cardiovascular disease and cancer than other American adults. It has been proposed that this may be due in part to lower circulating vitamin D levels in this population.

In a recent study published in the American Journal of Clinical Nutrition, researchers sought to determine the dose-response relation between vitamin D supplementation and subsequent blood levels of vitamin D.

The study was conducted in Boston, MA and included 328 African American adults who were enrolled over three winters from 2007 to 2010. Participants were randomly assigned to one of four supplement groups taking a placebo or 1,000 IU, 2000 IU, or 4000 IU of vitamin D daily. Diet history and socioeconomic information was collected from all subjects, and blood samples were collected at the beginning and again at 3 and 6 months.

At the beginning of the study, the average vitamin D level of each group was below the levels recommended by the Institute of Medicine (20ng/mL). After three months of supplementation the vitamin D level in the placebo group fell from 15.1ng/mL to 13.7 ng/mL, while the groups supplemented with 1,000 IU, 2,000 IU and 4,000 IU rose to 29.7 ng/mL, 34.8 ng/mL and 45.9 ng/mL respectively. The dose required to increase blood vitamin D levels to 20ng/mL in more than 97.5% of the subjects was estimated to be 1,640 IU. Supplementation with 4,000 IU was needed to reach vitamin D levels of at least 33 ng/mL in more than 80% of the subjects.

In this study of African American adults, supplementation with 4,000 IU per day was needed to achieve vitamin D concentrations shown in observational studies to reduce the risk of cancer and cardiovascular disease. High risk populations living in Northern climates should be encouraged to discuss vitamin D supplementation with their health care professional.

Kimmie Ng et al. Dose response to vitamin D supplementation in African Americans: results of a 4-arm, randomized, placebo-controlled trial. Am J Clin Nutr March 2014 vol. 99 no. 3 587-598.