

## Protective Cardiovascular Actions of Vitamin D in Postmenopausal Women

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Cardiovascular disease (CVD) is a major cause of global mortality [1]. Similarly, the frequency of vitamin D (VD) deficiency is increasing and a number of epidemiological and clinical studies have suggested that there is an increased risk of CVD among people with depletion of this vitamin [2]. This is no different in postmenopausal women (PMW), observational studies have shown that low levels of VD are linked to cardiovascular risk factors as well as to cardiovascular events [3,4].

Despite a possible relationship between VD and cardiovascular protection PMW studies are few and inconclusive. A study evaluating 478 Korean PMW, reported that low serum VD were significantly associated with the presence of metabolic syndrome and metabolic components, especially hypertriglyceridemia and hypertension [5]. Chon., *et al.* evaluating 4,364 PMW, from Korean NHANES data from 2008-2010, and did not observe a significant association between serum levels of VD and the prevalence of metabolic syndrome. However, women in the highest percentile VD concentration showed lower prevalence of hypertension, hypertriglyceridemia and reduced HDL, compared with those of lower percentile [6]. In a randomized, double-blind, placebo-controlled clinical study with 160 PMWs, with isolated daily supplementation with VD for 9 months in younger PMW was associated with a reduction in inflammatory markers. The authors hypothesis is that VD supplementation may reduce circulating immune-inflammatory markers suggesting a role as anti-inflammatory therapy treatment of cardiometabolic diseases [7]. In other randomized controlled study, the authors suggesting VD supplementation in combination with weight-loss of at least 5% of baseline weight was associated with significant reductions in levels of biomarkers [8].

A review with one hundred six articles, including 18 double-blind, placebo-controlled, randomized clinical trials, observed an association between low VD status and increased blood pressure, endothelial and renal dysfunction; however, the authors report that clinical trials have inconsistent findings, like the differences in features of participants, their adherence to the supplements, study duration, various dosage regimes, the concomitant calcium intake [9]. Although there are countless studies of observational data and a variety of confounding variables strengthening the cardioprotective effect of VD, this effect is uncertain and recommends caution with excessive VD supplementation in treatment of cardiometabolic disease [9].

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