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No effect of vitamin D supplementation on serum fibrinogen concentrations in adults aged ≥ 64 years

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High serum concentration of the acute phase protein fibrinogen is associated with tissue inflammation and is an independent risk factor for cardiovascular disease (CVD). Low vitamin D status is associated with an increased risk of CVD and the active form of the vitamin, 1,25-dihydroxyvitamin D₃, is a potent immunomodulator. Furthermore, vitamin D supplementation has been shown to reduce serum concentrations of inflammatory markers such as C-reactive protein in vitamin D deficient individuals. The aim of this study was to assess the effect of vitamin D supplementation on serum fibrinogen concentrations in a group of apparently healthy adults aged ≥ 64 years recruited in Cork and Coleraine.

A total of 202 individuals (males, *n* = 81; females, *n* = 121) were randomly assigned to receive either 5, 10 or 15 µg vitamin D₃/d or placebo for 22 weeks. Serum vitamin D status (25-hydroxyvitamin D (25(OH)D)) and fibrinogen concentrations were measured at baseline and post intervention using commercially available ELISA kits.

Vitamin D status did not significantly correlate with serum fibrinogen concentrations at baseline or post intervention. One-way analysis of covariance (adjusted for age, sex, centre, body mass index and baseline concentrations) revealed that while vitamin D supplementation significantly increased vitamin D status, it did not alter fibrinogen concentrations.

	Treatment group (µg vitamin D ₃ /d [†])								<i>P</i> [†]
	Placebo (<i>n</i> = 54)	5 µg/d (<i>n</i> = 48)		10 µg/d (<i>n</i> = 52)		15 µg/d (<i>n</i> = 48)			
25(OH)D (nmol/l)									
Pre	59.07	(43.37, 78.64)	51.84	(40.28, 71.34)	55.53	(43.00, 72.26)	55.09	(39.39, 70.82)	
Post	42.59	(27.82, 55.86) ^a	53.19	(45.57, 68.73) ^b	70.32	(57.98, 81.81) ^{cd}	73.86	(61.87, 90.20) ^{cd}	<0.0001
Fibrinogen (g/l)									
Pre	1.86	(1.25, 2.91)	2.12	(1.44, 3.54)	1.78	(1.25, 2.85)	2.22	(1.31, 3.08)	
Post	2.19	(1.60, 3.07)	2.10	(1.47, 3.79)	2.02	(1.40, 2.81)	2.18	(1.74, 3.20)	0.889

25(OH)D, 25-hydroxyvitamin D.

* Values are median (IQR).

† Effect of treatment assessed on log transformed data by ANCOVA. Different superscript letters denote significant differences between treatment groups (ANOVA).

In conclusion, vitamin D supplementation had a significant dose-response effect on vitamin D status, but did not affect serum concentrations of the inflammatory marker fibrinogen in healthy older adults. These findings concur with previous research in vitamin D deficient adults. However, it has been suggested that 25(OH)D concentrations >100 nmol/l may be required for modulation of immune responses; concentrations higher than those observed in the current study, even after vitamin D supplementation.

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