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Effect of vitamin D supplementation on circulating concentrations of C-reactive protein (CRP) in adults aged 20–40 and 64+ years

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C-reactive protein (CRP) is a measure of systemic inflammation; elevations in CRP concentrations are linked to increased risk of cardiovascular events⁽¹⁾. Vitamin D supplementation decreased circulating CRP concentrations in adults with serum 25-hydroxyvitamin D (25(OH)D) levels <27.5 nmol/l⁽²⁾.

The effect of vitamin D supplementation (0, 5, 10 and 15 µg vitamin D₃/d) on circulating CRP concentrations was examined in two randomised, placebo-controlled, double-blind 22-week intervention studies in men and women aged 20–40 years (*n* = 213; during winter 2006/07⁽³⁾) and 64+ years (*n* = 209; during winter 2007/08⁽⁴⁾) from Cork and Coleraine. Fasting serum levels of high sensitivity CRP and 25(OH)D were measured by ELISA at baseline (BL) and endpoint (EP).

No baseline differences in concentrations of CRP or 25(OH)D were observed between the four treatment groups. At BL, in the 20–40 year olds, linear regression analysis showed BMI to be the main determinant of CRP concentrations (β = 0.351; 95% CI 0.027, 0.058; *P* < 0.001). In the 64+ years group, age (β = 0.140; 95% CI 0.000, 0.024; *P* = 0.046), systolic blood pressure (β = 0.143; 95% CI 0.000, 0.007; *P* = 0.041) and BMI (β = 0.139; 95% CI 0.000, 0.026; *P* = 0.042) were the main determinants of CRP levels. Vitamin D supplementation significantly influenced 25(OH)D concentrations^(3,4). In both age groups, 25(OH)D concentrations were not related to CRP. Using CRP concentrations at EP as the dependent variable, ANCOVA, controlling for centre, age, gender, BMI, baseline 25(OH)D (and systolic blood pressure for 64+ years), showed no effect of treatment across the four groups. In conclusion, vitamin D supplementation had no effect on circulating CRP concentrations in apparently healthy adults aged 20–40 and 64+ years.

		Placebo	5 µg/d	10 µg/d	15 µg/d	<i>P</i> *
20–40 years		(<i>n</i> = 56)	(<i>n</i> = 50)	(<i>n</i> = 57)	(<i>n</i> = 50)	
CRP (mg/l)	BL	1.70 (0.62, 3.35)	2.14 (0.75, 4.13)	1.93 (0.67, 4.69)	1.76 (0.75, 3.39)	0.599
	EP	1.84 (0.87, 3.56)	2.05 (0.94, 3.79)	1.76 (0.83, 3.66)	1.58 (0.51, 4.39)	0.576
25(OH)D ³ (nmol/l)	BL	65.7 (57.2, 95.5)	60.0 (50.1, 88.9)	72.2 (56.7, 93.1)	77.2 (59.4, 89.7)	0.449
	EP	37.4 (30.9, 48.1) ^a	50.5 (44.8, 60.6) ^b	59.6 (49.4, 69.5) ^c	69.8 (59.4, 84.7) ^d	<0.001
64+ years		(<i>n</i> = 54)	(<i>n</i> = 48)	(<i>n</i> = 56)	(<i>n</i> = 51)	
CRP (mg/L)	BL	2.63 (1.65, 3.81)	2.37 (1.03, 4.39)	2.68 (1.60, 5.13)	2.93 (1.75, 5.08)	0.808
	EP	2.43 (1.20, 4.87)	2.22 (0.96, 3.50)	1.95 (1.18, 4.11)	3.03 (1.21, 4.85)	0.540
25(OH)D ⁴ (nmol/l)	BL	59.5 (42.7, 78.6)	51.8 (40.3, 72.6)	53.3 (41.9, 72.3)	52.8 (38.5, 67.7)	0.715
	EP	41.0 (27.8, 55.9) ^a	52.1 (45.5, 68.7) ^b	69.2 (58.0, 81.2) ^c	71.1 (61.4, 87.3) ^d	<0.001

Values presented as median (IQR). Values with different superscript letters are significantly different, *P* < 0.001. *ANCOVA.

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