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Recommended summer sunlight exposure levels can produce sufficient (> or =20 ng ml(-1)) but not the proposed optimal (> or =32 ng ml(-1)) 25(OH)D levels at UK latitudes.

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Abstract

Recommendations on limitation of summer sunlight exposure to prevent skin cancer may conflict with requirements to protect bone health through adequate vitamin D levels, the principal source being UVB in summer sunlight. We determined whether sufficient (> or =20 ng ml(-1)) and proposed optimal (> or =32 ng ml(-1)) 25(OH)D levels are attained by following UK guidance advising casual short exposures to UVB in summer sunlight, and performed the study under known conditions to enhance the specificity of future recommendations. During wintertime, when ambient UVB is negligible, 120 white Caucasians, aged 20-60 years, from Greater Manchester, UK (53.5 degrees N) received a simulated summer's sunlight exposures, specifically 1.3 standard erythemal dose, three times weekly for 6 weeks, while wearing T-shirt and shorts. The baseline winter data predict that 5% (confidence interval (CI): 2.7-8.6) of Greater Manchester white Caucasians have deficient (<5 ng ml(-1)) 25(OH)D, 62.5% (CI: 55.2-69.4) have insufficient, and only 2.9% (CI: 1.4-5.6) have proposed optimal levels. After the simulated summer exposures, 90 (CI: 84.9-93.7) and 26.2% (CI: 20.1-33.2) reached 20 and 32 ng ml(-1) 25(OH)D, respectively. Assuming midday UVB levels, sufficient but suboptimal vitamin D status is attained after a summer's short (13 minutes) sunlight exposures to 35% skin surface area; these findings will assist future public health guidance on vitamin D acquisition.

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