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J Steroid Biochem Mol Biol. 2016 Nov;164:223-229. doi: 10.1016/j.jsbmb.2016.03.025. Epub 2016 Mar 22.

## Vitamin D production in UK Caucasian and South Asian women following UVR exposure.

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### Author information

#### Abstract

**BACKGROUND:** It is known that skin pigmentation reduces the penetration of ultraviolet radiation (UVR) and thus photosynthesis of 25-hydroxvitamin D (25(OH)D). However ethnic differences in 25(OH)D production remain to be elucidated.

**OBJECTIVE:** The aim of this study was to investigate differences in vitamin D production between UK South Asian and Caucasian postmenopausal women, in response to a defined and controlled exposure to UVR.

**DESIGN:** Seventeen women; 9 white Caucasian (skin phototype II and III), 8 South Asian women (skin phototype IV and V) participated in the study, acting as their own controls. Three blood samples were taken for the measurement of vitamin D status during the run in period (9days, no sunbed exposure) after which, all subjects underwent an identical UVR exposure protocol irrespective of skin colour (9 days, 3 sun bed sessions, 6, 8 and 8min respectively with approximately 80% body surface exposed). Skin tone was measured four times during the study.

**RESULTS:** Despite consistently lower 25(OH)D levels in South Asian women, they were shown to synthesise vitamin D as efficiently as Caucasians when exposed to the same dose of UVR. Interestingly, the baseline level of vitamin D rather than ethnicity and skin tone influenced the amount of vitamin D synthesised.

**CONCLUSIONS:** This study have found no ethnic differences in the synthesis of 25(OH)D, possibly due to the baseline differences in 25(OH)D concentration or due to the small population size used in this study. Applying mixed linear model, findings indicated no effect of ethnicity and skin tone on the production of vitamin D; baseline level and length of exposure were the critical factors. To confirm that ethnicity and skin tone has no effect on 25(OH)D production, a larger sample size study is required that considers other ethnic groups with highly pigmented skin. Initial vitamin D status influences the amount of UVB needed to reach equal serum concentrations.

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**KEYWORDS:** Ethnicity; Sunbed; UV; Vitamin D

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