Evolution of UVA Protection

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Abstract

The importance of adequate ultraviolet A (UVA) protection has become apparent with improved understanding of the mechanism of damage to tissues that is mainly triggered by UVA induced free radicals. Fortunately more sunscreen actives for UVA protection have been developed and at present a great variety of UVA and broad-spectrum filters are available (BMDBM, BEMT (Tinosorb® S), DHHB (Uvinul® A Plus), MBBT (Tinosorb® M), ZnO (e.g. Z-Cote®). In parallel, UVA assessment methods have been created and further refined. The *in vivo* UVA Protection Factor (UVA-PF, measured by Persistent Pigment Darkening) inherently considers photostability, whereas pre-irradiation steps have been introduced only recently for the relative ratio methods such as UVA/UVB and the *in vitro* PPD determination. These methods serve to classify UVA protection of sunscreens according to regional standards or classification systems. The highest UVA classes of the FDA proposed rule (4 stars) and one UK company's[(a)] ratio system (5 stars) in the UK require better UVA protection than the European Recommendation (UVA-PF/SPF > 0.33). Recently methods have been developed to assess free radicals in the skin directly and to determine a Radical Skin/Sun Protection Factor (RSF). Our studies show that the RSF correlates well with UVA-PF, as expected. In daily care UVA protection is still neglected. We advocate that the UV filters and the methods developed for sun care should also be applied in daily care.

Introduction

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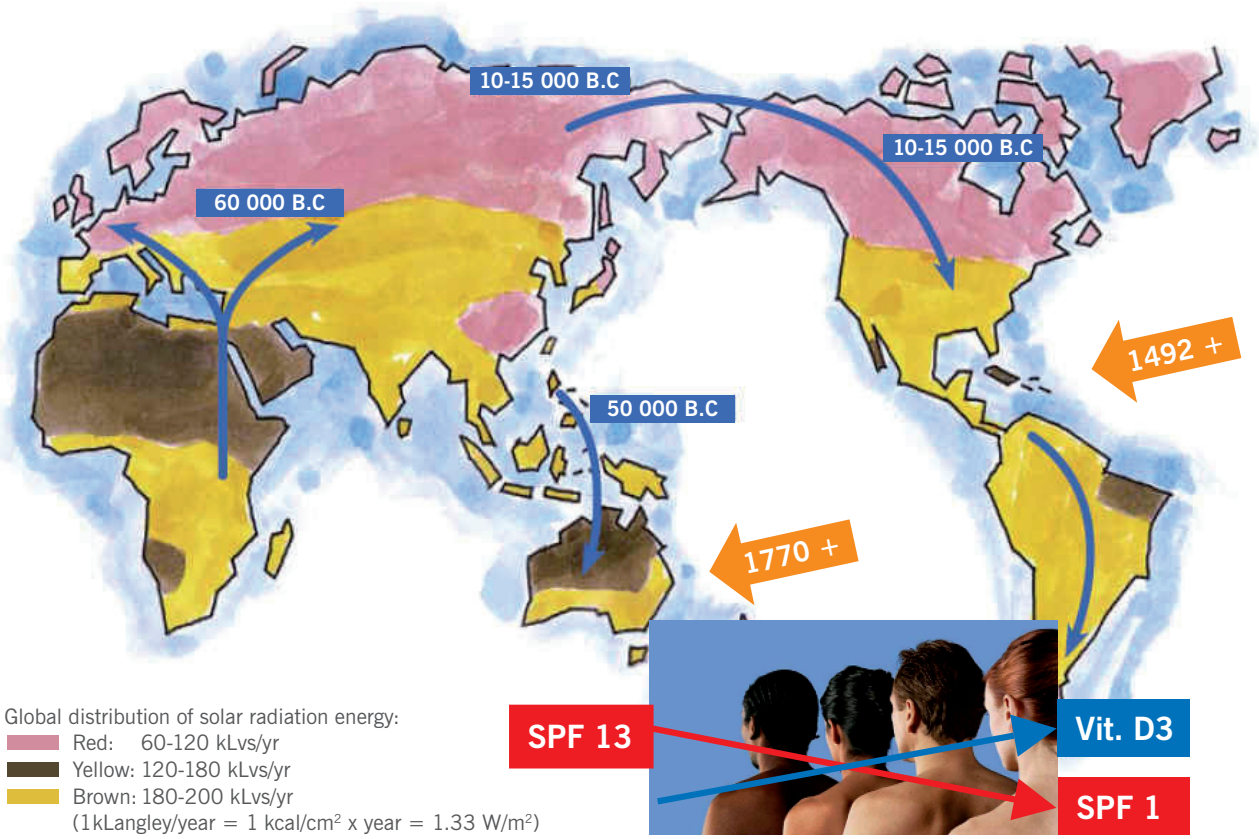

Figure 1. Evolution of modern human skin photo types. Fair skin types developed after migration out of Africa into areas of less sun exposure because of the Vit. D3 advantage.