

Influence of applied quantity of sunscreen products on the sun protection factor--a multicenter study organized by the DGK Task Force Sun Protection

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It is often debated that the protection against solar-induced erythema under real conditions is dependent upon the amount of sunscreen applied. It is believed that when too little is applied a lower sun protection than indicated on the label will result. The aim of this study was to quantify this effect. In this multicenter study, the influence of three different amounts (0.5, 1.0, 2.0 mg/cm²) of three commercial sunscreen products in three reliable test centers was investigated according to the test protocol of The International Sun Protection Factor Test Method. The main result was a linear dependence of the SPF on the quantity applied. Taking into consideration the volunteer-specific variations, an exponential dependence of confidence interval of the in vivo SPF and amount applied was found. The highest amount applied (2.0 mg/cm²) was linked to the lowest confidence intervals. Thus, from the point of view of producing reliable and reproducible in vivo results under laboratory conditions, the recommendation of this multicenter study is an application quantity of 2.0 mg/cm².