In Vivo Sweat Resistance Determination of Sun Protection Products

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Introduction
Sweating is known to clearly reduce the protecting effect of sun screen products. Thus it is important to apply sweat resistant products especially during physical activities or in the hot season. This poster presents an in-vivo method to investigate sweat resistance based on the ISO method for sun protection factor determination (1). Sweat induction is triggered by hot temperature in a sauna.

Material & Methods
Similar to the water resistance test method of the Colipa (2) the sun protection factor is determined initially on dry skin. On another day the products are applied on the back of the subjects (different test areas) before sweating is induced in a sauna session of 10 to 15 minutes at 80° C. The time to provoke a significant sweating clearly differs from person to person. Therefore the sweat induction phase is stopped after clearly visible drops of sweat have appeared on the back. The subjects cool down at ambient temperature of 24°C for 20 minutes before the sun protection factor is determined on the sweat exposed test areas.

Results and Discussion
Calculation of sweat resistance is accomplished according to the water resistance test method of Colipa (2). In case the lower confidence limit is calculated higher than 50 % of sweat resistance, a ‘sweat resistance claim’ is justified. In studies with more than 20 test products developed for sweat resistance results showed 50 % until 90 % remaining preservation of sun protection after sweating. This is comparable with the results we achieved with the water resistance test method of the Colipa when investigating prospective water resistant products. The variation of the method, fortunately is low. With a confidence interval of around 10 % (mean number of subjects n = 12) it is similar to the ISO sun protection factor test method (1).

Literature