Evaluation of Sunburn Protection by a Single Application of an SPF 70 Formulation at High Altitudes under Extreme Sun Conditions

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Introduction
The skin-damaging effects of ultraviolet B (UVB) radiation from sun exposure have been known for years. However, growing evidence also suggests a role for UV-A exposure (320 nm), which penetrates more deeply into the dermis than UVB, in acute and chronic injury to the skin, including photaging, immuno-supression, and carcinogenesis.1,2 Therefore, sunscreens should provide effective and long-lasting protection over the entire UV spectrum. Such protection can, however, be affected by other factors including those related to patient practices. One patient-related factor that hinders adequate sun protection is underapplication of sunscreen. This paper describes the efficacy of a single application of a patented photostable sunscreen system that combines avobenzone, oxybenzone, and the photostabilizer diethylhexyl 2,6-naphthalate (DEHN) to provide exceptional and long-lasting absorption through the UVA and UVB spectrum has been introduced into various sun protection products. This paper describes the efficacy of a single application of this patented sunscreen system when formulated as SPF 70 on protecting against sunburn at high altitudes where some of the most extreme UV light conditions are found.3

Materials & Methods

Results

Table 1 – Patient Demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 years</td>
<td>40</td>
<td>22</td>
</tr>
<tr>
<td>50 years</td>
<td>50</td>
<td>24</td>
</tr>
<tr>
<td>60 years</td>
<td>60</td>
<td>23</td>
</tr>
<tr>
<td>70 years</td>
<td>70</td>
<td>22</td>
</tr>
</tbody>
</table>

A total of 71 subjects completed the study. Demographic characteristics are shown in the Table.


Photostable SPF 70 Sunscreen

- 100% of participants reported that they did not experience sunburn
- 97% agreed or strongly agreed that the sunscreen formulation was non-irritating
- 72% agreed or strongly agreed that the sunscreen formulation was moisturizing

Conclusions
The new photostable SPF 70 sunscreen provided exceptional protection against sunburn under extreme conditions at high altitude after a mean of 5 hours of sun exposure following a single application of sunscreen. In this study in which 71 subjects participated, total protection was achieved in 100% of subjects under these harsh conditions. Even in the one patient who acknowledged under-applying the sunscreen to her nose, only mild erythema was observed. This particular point is of importance, given that many people do not apply enough sunscreen, yet the SPF 70 formulation was still able to protect against sunburn under extreme conditions with a single application. The SPF 70 sunscreen was non-irritating and also had moisturizing properties. The aesthetic elegance of the product may be of benefit in enhancing compliance with sunscreen use.

References