

***In vivo* Sun Protection Factor Analysis of Sunscreen Containing a Mixture of Chinese Botanical and Natural Products**

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ABSTRACT

Problem: The growing concern in scientific and popular media regarding the human and environmental safety risks of using physical and chemical filters in commercial sunscreens, and relatedly, their efficacy in protecting against UVR-induced cancer and photoaging has prompted the search for all-natural and non-toxic alternatives.

Method: This study assesses the pharmacognosy of Chinese herbs and natural ingredients according to their potential UV-shielding effects as identified by either ancient uses or in modern scientific research, combining them in the formulation of a cream emulsion named SEBAAR1. An FDA 2011 final rule sun protection factor (SPF) static *in vivo* test of SEBAAR1 was performed on three Fitzpatrick skin type II participants.

Results: An SPF value for SEBAAR1 of 6.24 +/- 0.00 was calculated as averaged across the three participants, indicating 84.0% filtration of UV-B radiation.

Conclusions/Recommendations: An SPF of 6 may be more than adequate for short sun exposure times, especially for skin types less sensitive to erythema. Analysis of the natural product sunscreen research indicates that SPF testing of a systematic series of SEBAAR1 ingredient formulation mixtures could inevitably lead to the production of a commercial sunscreen (with an SPF greater than 15) marking it as FDA approved for reducing the risk of skin cancer and photoaging.

Keywords: SPF, UVA/UVB, skin cancer, skin aging, sunscreen, melanoma, carcinoma, photodamage, photoprotection, dermatology, cosmetic chemistry, FDA, herbal extracts, pharmacognosy, traditional herbal medicine, botanical formulations, natural sunscreen.