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CORRELATION BETWEEN SPF INDEX AND SAFETY MARKER IN SUNCREENS

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In recent years, the safety of sunscreens has been challenged based on the reports of its adverse effect on users ; dermatitis, allergic contact dermatitis, photoallergic contact dermatitis. To investigate a correlation between sun protection factor (SPF) and the safety of sunscreens, we measured in vitro SPF index using homosalate as a standard and examined the toxicity tests on cosmetics ; primary skin irritation tests, ocular irritation test, and skin sensitization test. Among sunscreen ingredients, homosalate (HS), octyl methoxycinnamate (OMC), octyl salicylate (OS), octocrylene (OC) as UVB organic filter and benzophenoe-3 (BP-3), butyl methoxy dibenzoil methane (BMDM) as UVA organic filter, and titanium dioxide (TD), zinc oxide (ZO) as inorganic filters were selected. The results showed that skin irritation indexes in rabbits treated with HS, OMC, OS, BP3, and BMDM were increased as SPF indexes were increased but OC, TD, and ZO didn't increase skin irritation indexes significantly. Neither ocular irritation in rabbits nor skin sensitization in guinea pigs were increased significantly by the treated filters at any concentrations regardless of SPF indexes. It suggests that there might be a good correlation between SPF and skin irritation of organic UV filters and skin irritation might be one of most sensitive marker to assess the safety of sunscreens.

Keyword : sunscreens, SPF index, cosmetic safety, organic filters, skin irritation