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In Vivo Skin Micronuckeus Evaluation of Sunscreen Ingredients in Rabbits

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In vivo rodent micronucleus (MN) tests with haematopoietic cells as the target organ are recommended by ICH genotoxicity test guideline. Because of tissue specific mutagen and carcinogen, other organs including liver, gastrointestinal tract, colon, spermatid and skin are recommended as target organ. Most cosmetics and skin care products are applied on human skin and rabbit skin is well known as most sensitive skin. Therefore we established an *in vivo* MN test that uses rabbit skin as the target organ. Sample preparation is as follows. Cold-treating the epidermis with trypsin, peeling it off with a fine forceps, treating it in hypotonic solution, and staining it with acridine orange or Giemsa staining.

We evaluated the assay using mitomycin C (MMC) as model clastogens and positive control of indicative of skin micronucleus reported in mouse and rat. MMC induced a significant, dose-dependent increase in MN frequency in basal cells. To investigate whether could cosmetic ingredient induce skin specific micronucleus formation, sunscreen ingredients such as octyl methoxycinnamate, homosalate as UVB organic filter and benzophenoe-3, butyl methoxy dibenzoil methane as UVA organic filter, and titanium dioxide, zinc oxide as inorganic filters were selected. The results showed that all samples didn't increase skin micronucleus in rabbits. It suggested that all tested sunscreen seem to be non-genotoxic in rabbit skin.

Keyword : sunscreens, SPF index, skin micronucleus