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**Relationship between Outcome of Single Photo-Genotoxicity Assay  
and Rodent Photo-Carcinogenicity Assay**

Ji Young Kim, Mi Young Hong, Moon Koo Chung and Michael Lee

*Korea Institute of Toxicology, Korea Research Institute of Chemical Technology, Daejeon*

Many compounds might become activated after absorption of UV light energy. In some cases, the resulting molecule may undergo further biological reaction of toxicological relevance related especially to the photocarcinogenicity resulting from photogenotoxicity. However, no regulatory requirements have been issued with the exception of guideline issued by the Scientific Committee of Cosmetology, Commission of the European Communities (SCC/EEC) on the testing of sunscreens for their photogenotoxicity. Thus, the objectives of this study are to investigate the utility of three photogenotoxicity assays (photo-Ames, photo-CA and photo-comet) for detecting photo-mutagens, and to evaluate their abilities to predict rodent photocarcinogenicity. Photogenotoxicity assays were performed on five test substances that demonstrated positive results in photocarcinogenicity tests: 8-Methoxypsoralen (photoactive substance that forms DNA adducts in the presence of ultraviolet A irradiation), chlorpromazine (an aliphatic phenothiazine an alpha-adrenergic blocking agent), lomefloxacin (an antibiotic in a class of drugs called fluoroquinolones), anthracene (a tricyclic aromatic hydrocarbon a basic substance for production of anthraquinone, dyes, pigments, insecticides, wood preservatives and coating materials) and Retinoic acid (a retinoid compound closely related to vitamin A). Out of 5 test substances, 3 showed a positive outcome in photo-Ames assay. Conversely, all substances tested were appeared to be positive in photo-CA and photo-comet assays, suggesting that photo-CA and photo-comet (for detecting clastogens) may be superior to photo-Ames (for detecting mutagens) in predicting the photocarcinogenicity. Especially, the photo-comet test with mammalian cells seems to be a good and sensitive starting point for primary screening of photogenotoxic compounds because photo-comet assay is an easy and less time-consuming method compared to phot-CA.

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