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Lise Aubry, Lucie Breuillé, Thierry Douki

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TOXICOLOGICAL IMPACT OF PHOTODEGRADED ORGANIC TATTOO PIGMENTS ON HUMAN CULTURED KERATINOCYTES

Lise Aubry¹, Lucie Breuillé¹, Thierry Douki¹

¹*Univ. Grenoble Alpes, Cea, Cnrs, Irig, Symmes, Cibest, France*

Aim: Tattooing is very popular around the world. However, the safety of tattoo inks remains to be fully evaluated. These products contain pigments, which are insoluble compounds that persist in the skin dermis. Organic pigments including azo and polycyclic pigments are increasingly used for tattoos. These compounds may be altered by sun exposure or dermic macrophage activity. These processes may lead to generate soluble molecules, which could diffuse into the epidermis and affect the major cells of this layer, keratinocytes. Interestingly, a link is suspected between tattooed skin and some cutaneous diseases like basal-cell carcinoma. Only few articles deal with the toxicity of degraded pigments in epidermis. This topic is the basis of ongoing work in our group.

Methods: High-performance liquid chromatography coupled to mass spectrometry (HPLC-MS) is used to investigate the degradation of pigments. *In vitro* studies using the HaCat keratinocytic cell line allow us to unravel the effects of photodegradation and degradation by macrophages on the toxicological profile of pigments.

Results: First results show different cytotoxic profile between a series of pristine organic pigments and suspensions exposed to heat and simulated sunlight. Analysis by HPLC-MS show that exposure of some pigments to ultraviolet light can generate photoproducts.

Conclusions: Simulated sunlight exposure alters some organic pigments and it may modify their toxicological properties on keratinocytes. Further studies will investigate the production of oxidative stress and generation of DNA breaks. Similar studies will be performed with pigments aged in solution mimicking the lysosomal condition in macrophages.