*Toxicol. In Vitro*, **16**, 759-763 (2002).

## Kinetic analysis on the in vitro cytotoxicity using Living Skin Equivalent for ranking the toxic potential of dermal irritants

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The extent of cytotoxicity injured by several skin irritants was kinetically measured and analyzed in a three-dimensional cultured human skin model, Living Skin Equivalent-002 (LSE). Colorimetric thizoyl blue (MTT) conversion assay was selected as a cytotoxicity assay, and olive oil (OO), lactic acid (LA), Triton X-100 (TX) and sodium lauryl sulfate (SLS) were evaluated as model irritants. OO had almost no effect on the viability of LSE. When the other irritants were applied on the full-thickness LSE, two first-orderd decreasing phases, initial slow and following rapid phases, were found in the viability of LSE. LA and TX showed a bigger difference between the slow and rapid rates than SLS to show an inflection. The inflection time point from the slow to rapid rate was dependent on the kind and concentration of irritants applied. The higher the concentration of irritants applied, the more rapid the inflection point was observed. When LA and SLS were applied on the stratum corneum-stropped LSE, on the other hand, viability was mono-exponentially decreased with time. LA, TX and SLS probably decrease the barrier function of the stratum corneum to increase the rate of cytotoxicity during the irritant application. Interestingly, the rate of cytotoxicity on the stripped skin was similar to the late rapid rate on the full-thickness skin in LA not in SLS. These results suggest that cytotoxicity of skin irritants barrier function of skin as well as the application concentration and intrinsic toxicity of irritants.