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Non-animal skin sensitization safety assessments for cosmetic ingredients - What is possible today?

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Title:

Non-animal skin sensitization safety assessments for cosmetic ingredients - What is possible today?

Short title:

Non-animal skin sensitization assessments for cosmetics today?

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Abstract:

A key part of the safety assessment for cosmetic ingredients is the evaluation of skin sensitization, i.e. their potency to induce an immune response in the skin involving the innate and the adaptive immune system. For decades the murine local lymph node assay (LLNA) has been key for assessing the threshold dose per exposed skin area at, or below which, contact allergy induction does not occur in humans. Nowadays cosmetic regulation requires to perform safety assessments without the use of animals. Correspondingly, this review aims to address the questions: What *in silico* and *in vitro* tools are available that can be applied to generate potency information? How can this information be combined to enable prediction of induction thresholds? To what extent can non-animal strategies support a skin sensitization safety assessment? How can exposure considerations support non-animal potency assessment? Finally, we used some hair dye and fragrance ingredients as examples to introduce a current

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