BACKGROUND

- COSMOS was one of seven projects in EU BEURAT-1 (Safety Evaluation Ultimately Replacing Animal Testing) cluster, with the main aim to develop freely available computational tools and workflows to assess the safety of cosmetic ingredients for humans.
- The major delivery of the COSMOS Database maintained through the COSMOS DataShare Point, is a means of managing and sharing toxicity and chemical data to assist in the safety assessment of cosmetics-related substances under the paradigm of non-animal testing strategies.
- The quality of any in silico predictions and acceptance of the models greatly depend on the quality of data used for their development, thus the collection and curation of high quality data are of major significance.
- In order to assure data quality, the COSMOS project established a robust data quality evaluation process through application of the COSMOS MINIS criteria.

OBJECTIVE

- To demonstrate the utility of the COSMOS MINIS scoring system in data gap filling we present a Read-Across (RA) case studies for the class of parabens and phenylethanolamines.

METHODS

- COSMOS MINIS criteria address the data record reliability (data completeness) in the COSMOS database, which is judged based on a set of guidelines or protocols.
- The COSMOS MINIS criteria were derived from in depth evaluation of the three regulatory guidelines for testing of repeated-dose toxicity studies: OECD, US FDA and EPA.
- Based on the criteria, the COSMOS MINIS Grade scoring system was developed.

RESULTS

- Study parameters for COSMOS MINIS criteria.
- Cosmetics inventory derived from 15 sources.
- COSMOS MINIS Grade (reliability scores).
- COSMOS MINIS criteria address the data record reliability (data completeness) in the COSMOS database, which is judged based on a set of guidelines or protocols.
- The COSMOS MINIS criteria were derived from in depth evaluation of the three regulatory guidelines for testing of repeated-dose toxicity studies: OECD, US FDA and EPA.
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REFERENCES


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CONCLUSIONS

- Quantitative data reliability metric is essential for estimating uncertainties in information used for Read-Across.
- The quality of any in silico predictions and acceptance of the models greatly depend on the quality of data used for their development.

CASE STUDIES: Application in Read-Across

Case Study 1: Target compound (T): Propylparaben; Target endpoints: Reproductive and developmental tox

- Multiple studies of questionable reliability – objective data quality scoring system helps in selection of the most reliable data and decreasing the uncertainty of the final RA outcome.

Case Study 2: Target compound (T): HC RED NO. 7; Target endpoint: Kidney toxicity

- Good quality data for all analogs confirmed by objective COSMOS MINIS scoring system – decrease of uncertainty of the final RA outcome.

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