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L'ORÉAL AND CAPACITÉS BREAK NEW GROUND IN EVALUATING BIODEGRADABILITY

#medium-throughput screening #high-throughput screening #ecotoxicity #biodegradability #environmental profiling #mass balance #customised inoculum

To date, there are no straightforward methods when it comes to a rapid assessment of the biodegradability of mixtures such as cosmetic creams. L'Oréal called upon the experts at the GEPEA Laboratory and Capacités in order to assist in bridging this methodological gap. The resulting new process has served to assist L'Oréal in developing methods for evaluating the biodegradability of their products, thus allowing them to better adhere to the strict regulatory requirements.

DETERMINING THE BIODEGRADABILITY OF A MIXTURE OF SUBSTANCES

The standardised biodegradability tests are designed for analysing mono-constituent substances, whereas cosmetic creams are made up of a mixture of different substances. The current methods thus require that each substance be isolated and tested separately. Prompted by L'Oréal, the specialists at the GEPEA Laboratory and Capacités developed an alternative method for measuring the biodegradability of a mixture in its entirety. The method they devised is based on investigating the transformation of carbon in a substance, as is brought about by microorganisms. When it comes to biodegradation, the best-case scenario is that the carbon is transformed through the release of CO₂ and by being partially integrated into the microbial biomass. In determining the amount of residual CO₂ and the small fraction of carbon integrated into the biomass, Capacités's

specialists are able to assess the biodegradation level of creams. This evaluation is followed up by ecotoxicological testing to measure the impact of the residual waste carbon upon its release into the environment.

A study outlining this new method was published in Green Chemistry, a highly regarded peer-reviewed journal that is widely read among the scientific community. Owing to this innovative initiative, L'Oréal is gradually acquiring the necessary skills and knowledge in order to optimise biodegradability evaluation for its cosmetics.

To successfully complete this project, the Capacités' experts benefited from support and technical equipment from the GEPEA, joint research unit of Université de Nantes, Oniris, IMT Atlantique and CNRS (The French National Centre for Scientific Research). ■

Expertises:

- Analytical chemistry
- Biodegradability assessment
- Ecotoxicity analysis

CAPACITÉS

Created in 2005, Capacités is the private engineering and research valorisation subsidiary of the University of Nantes. It employs 90 employees, mainly engineers and PhDs, who work directly with scientists in the research laboratories.



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