Establishing baseline sensitivity data using LCMS/MS to investigate dermal in-vitro absorption Studies

In-vitro dermal absorption studies are valid alternative to in vivo studies. These studies are performed on tiny pieces of skin in isolation, in a sophisticated flow-through diffusion cell instrument. Dermal absorption studies are an integral part of non-dietary human safety risk assessments for agrochemicals. Typically, dermal absorption data for agrochemical active substances are generated from an undiluted formulation concentrate and its spray dilutions. These studies are conducted to detect how much of chemical penetrates the skin, and thereby whether it has the potential to be absorbed into the systemic circulation. It provides an indication that the substance penetrates the skin if it produces systemic toxicity, but the amount of chemical absorbed is not quantified during dermal toxicity testing.

The analytical approach allows obtaining much purer sample extracts, when compared with the use of standard solvent extraction followed by purification technique. However, the analytical method for determination of concentration of active ingredients of pesticides in various vehicles which are used in *in-vitro* dermal absorption studies, need validation as per the requirement of the guideline. The analytical method should be simple, robust accurate and precise. It needs to yield a satisfactory result with better calibration. Furthur the method should have negligible matrix effect in the determination of the active ingredient content in the real samples of dermal absorption *in-vitro* study. For analysis of pesticides, the analytical method should have promising applications in the real sample analysis of *in-vitro* toxicological studies. Thus, while maintaining the required sensitivity, precision, and accuracy with simpler extraction method, foot print of instrumentation was decreased resulting in the decreased solvent consumption by 85% and a reduced power need.

About The Author

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A scientist having research experience of more than 11 years on multi-pesticide residues activity related to environmental concern and has earned specialization in residue chemistry, and intimately involved in the residual analytical method validation and independent laboratory validation (ILV) which are conducted under GLP Compliances for EPA and EU registration.

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