

Nonconfidential Summary Disclosure



UM 8680: Methods for Detecting and Categorizing Skin Sensitizers

THE TECHNOLOGY

Researchers in the National Center for Natural Products at the University of Mississippi have developed a patented method of detecting potential skin sensitizers in various personal care products.

This spectrophotometric in chemico method utilizes a modified fluorescent probe to assess the reactivity of potential chemical sensitizers.

This method is designed to detect and characterize pure compounds and compounds contained in complex mixtures such as botanical extracts in cosmetic, personal care product formulations.

The optimized work-flow of the method offers several advantages over currently used methods:

- Rapid & simultaneous analysis of complex mixtures
- Direct estimation of covalent adducts
- Less false positives

Comparison of 8680 Assay with Validated Methods

Tested Chemical	Classification ¹		
	UM 8680	Cys-DPRA	LLNA
Propionolactone	Strong	n.a.	Strong
2-Methyl-4-isothiazolin-3-one	Strong	Strong	Moderate
Cinnamaldehyde	Moderate	Moderate	Moderate
2,4-Heptadienal	Moderate	Strong	Moderate
Safranal	Weak	Strong	Moderate
Perilaldehyde	Weak	Moderate	Moderate
Citral	Weak	Strong	Moderate
5-Methyl-2,3-hexanedione	Weak	Moderate	Weak
1-Bromobutane	Non	Weak	Non
Vanillin	Non	Non	Non
Tartaric acid	Non	Non	Non
Chlorobenzene	Non	Non	Non

¹Avonto C. *et al.* TAAP 289.2 (2015): 177-184

COMPETITIVE ADVANTAGE

Allergic contact dermatitis results from repeated exposure to a chemical sensitizer. The majority of chemical sensitizers are small, electrophilic and lipophilic, and several in vitro methods have been developed to detect such compounds. Due to inherent limitations of each individual assay, these methods are often used in combination in the pharmaceutical and cosmetic industries with the goal of replacing in vivo models such as the mouse local lymph node assay (LLNA).

UM 8680 addresses the need for a more economical, robust, fast, versatile, and reliable assay to detect chemical sensitizers without using animals, especially in complex mixtures such as botanical ingredients added to and cosmetic formulations.

DEVELOPMENT POTENTIAL

We are seeking a commercial partner to complete validation studies.

PATENT STATUS

U.S. 10,261,017

PRINCIPAL INVESTIGATOR(S)

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KEYWORDS

Skin sensitization, alternative test methods, electrophiles, fluorescence assays

PUBLICATIONS

Toxicology In Vitro 2018, 46, 237-245.
Tox. And Applied Pharmacol., 2017, 318, 16-22.
Chem. Res. Toxicol., 2016, 29, 1108-1117
Tox. And Applied Pharmacol., 2015, 289, 177-184.



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