

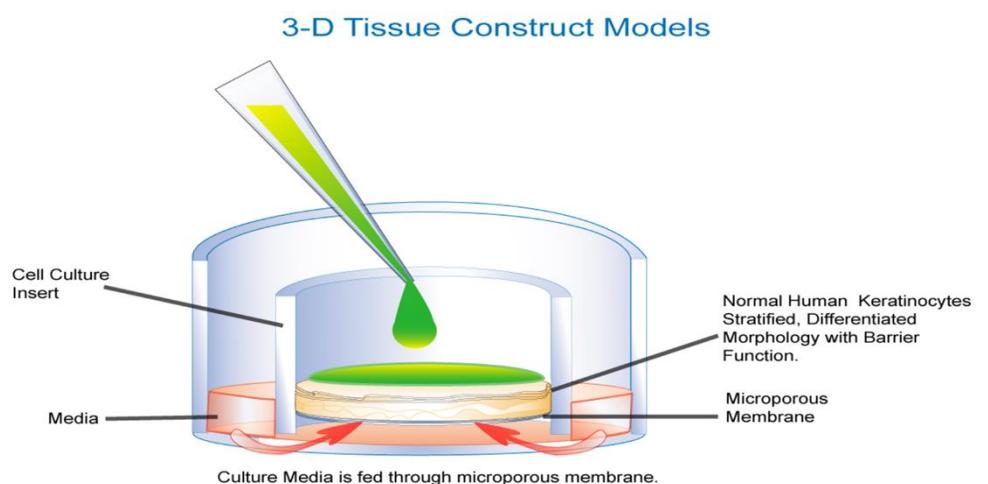
Epi-Derm™ Skin Irritation Testing Results Show Skin Lotions with Laurest® are “Non-irritating”

The Test Method – MatTek EpiDerm™ Viability Assay:

MB Research Laboratories used a testing method developed to avoid animal testing, the MatTek EpiDerm™ Viability Assay. EpiDerm Skin Irritation (OECD TG 439) Testing is a proven in-vitro model system with excellent in vitro-in vivo correlation. It is routinely used for cosmetic testing throughout the United States, Canada, Europe, Japan, and Eastern Asia to determine the skin irritation potential of liquids, solids, gels, lotions, ointments or creams.

Instead of a test animal, the subject of EpiDerm™ consists of human skin cells (keratinocytes) specifically cultured to form multiple, differentiated, and distinct layers in a manner very close to the way the human epidermis self-organizes. The complexity of the medium ensures that chemical responses and physical interactions of healthy skin are mimicked as closely as possible.

Samples of lotions with Laurest® were applied to the EpiDerm™ layer in a test well depicted on the right. After a standard contact time, the response of the keratinocytes is measure by the degree to which the color of a test solution changes from yellow to purple-blue. The strength of the color change is indicative of the mitochondrial metabolic rates in the subject keratinocytes.



Source: MB Research Laboratories

Results of Laurest® Lotion Testing:

MB Research found that all of the Laurest® lotion samples were well within the “non-irritant” range. Specifically:

-  A test substance is considered “non-irritant” if the strength of the color change is more than 50% of the color change of the negative control.
-  The measured color changes for skin lotions with 0, 5% and 10% Laurest® were 79%, 77% and 74%, respectively.
-  The ET₅₀, the number of hours required to induce a 50% reduction in metabolic rate, was greater than 24 hours, which means undetermined.

What These Results Mean:

These results indicate that skin products can be formulated with Laurest® without risk of irritation. The mixture of lauric esters in Laurest®, with their antimicrobial action, can be used in skin and cosmetic formulations to augment and complement, instead of replacing, the innate outer defenses of healthy skin.

About Copperhead Chemical Company®: Copperhead is a leading manufacturer of active pharmaceutical ingredients and specialty chemicals located in Tamaqua, PA USA. Copperhead is dedicated to quality and operates in accordance with Good Manufacturing Practice regulations enforced by the U.S. FDA. Contact information is as follows:

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¹ [Methods and compositions for novel liquid crystal delivery systems](#). U.S. Patent Number: 8,546,593.