A Skin Sensitization Risk Assessment of Common Ingredients Present in Commercially Available Cleansing Conditioners

Poster Presentation at Society of Toxicology 57th Annual Meeting
March 11-15, 2018
San Antonio, Texas

Monnot, A.D., KS. Towle, R. Novick, E.S. Fung, D.J. Paustenbach and D.A. Drechsel

Abstract:
An essential step in ensuring the toxicological safety of cosmetic or personal care products is the evaluation of the skin sensitizing potential of all of the ingredients used in the product. In this analysis, we used standardized protocol from cosmetic trade industry and consumer safety groups in order to evaluate the sensitization potential of individual ingredients in three varietals of commercially available cleansing conditioners. A total of 32 ingredients present in cleansing conditioner products were evaluated for inclusion in this analysis. Each ingredient underwent 1) a dermatological evaluation and classification for allergenic potential, 2) an in silico analysis for irritation and sensitization potential, and 3) a thorough literature evaluation to determine reported or suspected risk of sensitization. Ingredients identified as high or moderate risk of inducing an allergenic dermal response were included for further evaluation. A total of 9 unique ingredients present in the cleansing conditioners were identified for evaluation, including 4 botanicals, 2 preservatives, 1 conditioning agent, 1 emulsifier, and 1 fragrance. It should be noted that the identified fragrance consisted of 45 separate chemical constituents, which were also evaluated for skin sensitization potential. For each ingredient included for evaluation, a Consumer Exposure Level (CEL) was calculated using the amount of product applied, a retention factor, the constituent specific concentration, and surface area of an adult scalp. The CELs were compared to the weight-of-evidence (WoE) no-effect sensitization level (NESIL) for the constituent if possible. If a NESIL for a specific ingredient could not be located or has not been determined, the dermal sensitization threshold (DST) approach was utilized to evaluate the safety of the particular constituent, botanical or fragrance. A margin of safety (MOS) was calculated for each constituent present in the cleansing conditioners utilizing a sensitization assessment factor. The MOSs for the ingredients and fragrance constituents were all greater than 2. This analysis indicates that exposure to the individual ingredients present in WCD cleansing conditioners would not be expected to induce dermal sensitization in a consumer.