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EFFICACY EVALUATION OF INGREDIENT MIXTURES USING AN *IN VITRO* MODEL OF ATOPIC DERMATITIS

Mancini F, Mastrocola E, Donelli D, Durando L and Ragni L
Angelini R&D, Italy

Atopic dermatitis (AD) is an inflammatory skin disease characterized by erythema and pruritus commonly affecting children. The pathophysiology of AD is complex and not fully understood. A myriad of factors, including genetics, defects in the immune response, and skin barrier abnormalities contribute to the pathogenesis. The efficacy of mixture A (moisturizer, prebiotics, natural antioxidant mixture) and mixture B (moisturizer, prebiotics, natural antioxidant mixture, lipid molecules, natural anti-inflammatory compound), appropriately designated for atopic baby skin treatment, has been investigated using a 3D epidermis model co-cultured with THP-1 cells and infected with *S. aureus*, mimicking feature and morphology of AD. Both ingredients mixtures were topically applied on the surface of tissues and at the end of exposure (16H) histological evaluation and RNA extraction have been performed. Results have shown that mixture A treatment has globally induced a slight swelling of tissue cells, whereas with mixture B treatment structure, thickness and number of stratum corneum layers are fully preserved. Thymic stromal lymphopoietin TSLP, related to the decrease of barrier integrity, functionality and skin colonization, and TNFα and IL-8, indicative of inflammatory response, were assessed as biomarkers of AD initiation. Both mixtures reduced in significant manner the TSLP overexpression suggesting a role in restoring/enhancing immunity response and mixture B reduced significantly also both inflammation mediators. The combined use of prebiotics to boost the growth of the protective friendly skin bacteria, lipid molecules that are effective in improving barrier properties, and a bioactive compound that exhibits potential anti-inflammatory activity, could explain the reduction of inflammatory response and ameliorative effects observed on tissue by mixture B, which can be favourable used in cosmetic formulations for baby care to support AD treatment.

Biography

Francesca Mancini is an *in vitro* Pharmacology Researcher. She has graduated in Pharmaceutical Chemistry and Technology from University La Sapienza of Rome, Italy. She is working in Angelini SPA Company – Piazzale della Stazione, snc – 00071, S. Palomba Pomezia (Rome), Italy from 2001. She had been as Researcher into the following structures: Drug-Delivery, Immunopharmacology, *In vitro* Pharmacology. From December 2016, she is working on well-established products research into development of Non-Pharma Products: food supplements, medical devices and cosmetics. In particular, she is working on pre-clinical development choosing the pre-clinical assays to evaluate different ingredients to design new formulations or to support the claims or to complete Product Information File. She has published more than 15 papers in reputed journals and participated in many international meetings with oral and posters presentation.

f.mancini@angelini.it