ATOPIC ECZEMA/DERMATITIS

TOPICAL APPLICATION OF NOVEL USNIC ACID DERIVATIVE SUPPRESSES 2,4-DINITROCHLOROBENZENE-INDUCED ATOPIC DERMATITIS-LIKE SYMPTOMS IN HAIRLESS MICE

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Introduction: Environmental pollution, exposure to various chemicals and genetic causes are leading to a steady increase in dermatitis. Recently, atopic dermatitis patients with severe skin pruritus have been increasing, and related research targeting various targets have been progressing. It has been shown that cytokine, called thymic stromal lymphopoietin (TSLP) is secreted from keratinocytes in patients with itch and a major mediator of immune responses such as antimicrobial peptide production and immune cell chemistry in atopic dermatitis.

Objective: We aimed to develop a novel TSLP-targeting substance that inhibit atopic dermatitis and aimed to validate its efficacy in animal models.

Materials and Methods: We designed and generated a novel usnic acid derivative composed with cinnamic acid and usnic acid and tested its efficacy of blocking suppresses 2,4-dinitrochlorobenzene (DNCB)-induced atopic dermatitis-like responses in SKH-1 hairless mouse skin.

Results: In this study, it was confirmed that newly synthesized usnic acid derivative mitigate the responses of atopic dermatitis induced by DNCB in hairless mice. In the usnic acid derivative treated group, atopic symptoms induced by DNCB were significantly alleviated visually. In the usnic acid derivative treated group, the number of scratches and the epidermal thickness decreased compared to the DNCB induced group. In addition, the usnic acid derivative inhibited the expression of cytokines such as TSLP and IL-4 in skin tissues and inhibited the level of IgE in plasma.

Conclusions: This novel synthetic usnic acid derivative can ameliorate DNCB induced atopic dermatitis-like symptoms in vivo, providing a promising therapeutic approach against atopic dermatitis.