1. No.

   2022Y003

2. Title

   The Development for the Therapeutic Methods for Psoriasiform Dermatitis: Focused on nAChRs

3. Period

   2022-2024

4. Summary

The neurotransmitter acetylcholine (ACh) stimulates nicotinic acetylcholine receptors (nAChRs) expressed in both excitable and non-excitable cells. Cholinergic signaling in non-excitable cells induces anti-inflammatory responses. It is reported that the cholinergic anti-inflammatory system inhibits the development of inflammatory diseases such as multiple sclerosis, colitis and rheumatoid arthritis. The subunits of nAChR are expressed in different layers of the epidermis. Cholinergic anti-inflammatory signaling is involved in the development of cutaneous inflammatory diseases. However, the role of nAChR-related signaling remains unclear in psoriasiform dermatitis.

In this study, in vitro experiments showed that nicotine stimulation can regulate the proliferation of keratinocytes by independence of α7 nAChR pathway, which is one of major nAChRs pathway. However, *in vivo* and *in vitro* psoriasiform dermatitis model showed the difference of nAChRs expression levels and the contribution of cholinergic signaling. In addition to the hyperproliferative keratinocytes and immature keratinocyte, various immune cells infiltrate into the pathogenic region of psoriasiform dermatitis. Thus, to develop the nAChR-targeted agents, comprehensive understanding of nAChR in skin is important using various *in vitro* and *in vivo* chronic dermatitis models. As a future plan, the comparison analysis between *in vivo* psoriasiform dermatitis and atopic dermatitis will be designed.