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Characterization of Molecular Targets to Mediate Skin Itch and Inflammation

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Abstract : In the treatment of individuals with sensitive and psoriatic skin, several inflammation and itch-related molecular and cellular targets have been identified, but many of these have yet to be characterized. In this study, we present two potential targets in the skin that can be linked to the inflammation and itch cycle. 11ßHSD1 is the enzyme responsible for converting inactive cortisone to active cortisol used to transmit signals downstream. The activation of the receptor NK1R correlates with promoting inflammation and the perception of itch and pain in the skin. In this study, both targets have been investigated based on their involvement in inflammation. The role of both identified targets was characterized based on the secretion of inflammation cytokine- IL6, IL-8, and CCL2, as well as phosphorylation and signaling pathways. It was found that treating skin cells with molecules able to inhibit inflammatory pathways results in the reduction of inflammatory signaling molecules secreted by skin cells and increases their proliferative capacity. Therefore, these molecular targets and their associated pathways show therapeutic potential and can be mitigated via small molecules. This research can be used for further studies in inflammation and itch pathways and can help to treat pathological symptoms.

Keywords : inflammation, itch, signaling pathway, skin
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