

Opioids and skin homeostasis, regeneration and ageing – What's the evidence?

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Abstract

What has the opioid receptor system, known for beneficial as well as disastrous effects in the central nervous system, to do with skin? The question is appropriate considering the fact that the nervous system and the skin both derive from the ectoderm. As part of the skin neuroendocrine system, the opioid receptor system exemplifies the closeness between the nervous system and the skin. Overexpression of the δ -opioid receptor in keratinocytes yields dysregulation of involucrin, loricrin, and filaggrin, proteins essential to the integrity of the skin barrier. The μ -opioid receptor ligand β -endorphin, produced in the pituitary gland and a variety of skin cells, promotes wound healing *via* regulation of cytokeratin 16 and TGF- β type II receptor expression in keratinocytes. These and other published results discussed in this viewpoint are evidence for the fundamental role of the skin opioid receptor system in skin homeostasis, regeneration and ageing. While considerable progress in understanding the opioid receptors' function on the cellular level has been made, there is a need to link these results to physiological observations for the development of local skin therapies.