

Epsins in Notch skin activation

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Epsins are accessory proteins for clathrin mediated endocytosis. This family consists on three members of which epsin 1 and 2 are ubiquitously expressed, while epsin 3 is mainly expressed in surface epithelia. Epsins have been related to Notch signaling (Chen et al., 2009). This pathway is involved in a broad range of processes which are fundamental for differentiation of cells derived from the three-germ layers as well as for tissue homeostasis. In skin, Notch, in concert with Shh and Wnt pathways, controls cell development and renewal, in particular regulating keratinocyte transit from basal to upper layers (Okuyama et al., 2008) Recently, we modulated the expression of epsin 1 and 3 in a human normal keratinocyte cell line – the HaCaT cells - as an initial approach to elucidate the correlation between epsin function and Notch activation in human epithelia. Silencing of epsin 1 and 3 genes by short harpin (sh) RNA technique results in downregulation of Notch signaling as assayed by scoring for the expression of some of its read-outs, including Hes1 and p21. p21 is a key factor in cell cycle arrest: decreasing p21 level determines an increase of cellular proliferation of HaCaT cell line where epsin 1 or 3 have been stably silenced. Then, we have investigated in these cell lines the expression of differentiation markers of the basal and suprabasal skin compartments. Our preliminary results in HaCaT cell line suggest a role of epsins in critically supporting Notch signaling activation during the differentiation of human keratinocytes *in vitro*.

References

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Key words

Epsin; Endocytosis; Notch signaling; Skin; Keratinocyte.