THE ROLE OF OXIDATION IN FSL-1 INDUCED SIGNALING PATHWAYS OF ATOPIC DERMATITIS MODEL IN HACAT KERATINOCYTES

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Background: FSL-1 (deacylated lipoprotein) is known to induce secretion of thymic stromal lymphopoietin (TSLP), IL33 and IL25 (interleukins 33 and 25) in HaCat keratinocytes. These cytokines' expression increase is a typical reaction in atopic dermatitis (AD).

Nuclear factor κB (NFκB) and p38 mitogen activated protein kinase (MAPK) were shown to be activated by FSL-1 and involved in the expression of the above cytokines.

Oxidative stress is common in inflammatory conditions and may be important in disease etiology.

Methods: Revealing the oxidation involvement in signaling pathways leading to expression of AD typical cytokines in HaCat keratinocytes, was performed by using the stimulator FSL-1 and inhibitor to oxidative stress N-actylcysteine (NAC). Cytokines' expression was studied by real time PCR, NFkB and p38 MAPK activation was studied by western blot and oxidative state of cells was determined by Dichlorofluorescein (DCF) assay.

Results: HaCat Keratinocytes endogenous oxidative stress appeared 4 hours after FSL-1 administration and probably was not caused directly by FSL-1 stimulation. This oxidation activated NF-κB, but not p38 MAPK. After 4 hours of FSL-1 stimulation, NAC was able to reduce IL33 mRNA expression and after 6 hours of stimulation mRNA expression of TSLP and TNFα were also reduced.

Conclusion: Although the appearance of oxidative stress in FSL-1 induced reaction is probably a secondary event, it effects the expression of specific AD typical cytokines. Nevertheless, its role in the inflammatory response of FSL-1 induced NF-kB activation and the implications to the progress of AD like reaction, needs further investigation.