

GENETICS AND GENODERMATOSES

## AUTOPHAGY AND INFLAMMATION RELATION IN SKIN CELLS

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**Introduction:** Autophagy, a major cellular degradative and recycling pathway, is critical for cellular longevity through maintenance of cellular homeostasis and has also been linked to the aging process as it decreases with age. Decreased autophagy leads to an increase in oxidative damage and in the release of inflammatory cytokines. This, in turn, results in an accumulation of dysfunctional proteins, lipids, and intracellular damage.

We have previously shown the loss of autophagy capacity and temporal rhythm in mature skin cells, resulting in an increase of cellular damage. Here, we address the importance of autophagy in relation to inflammation control. There might be an efficient cross-talk between autophagy and inflammatory signaling pathways in order to resolve inflammation allowing for the tissue to return to a steady state. The inflammation process consists of three distinct phases: initiation, amplification and resolution. Here, we will study the relation between autophagy and resolin.

**Objective:** To evaluate both the autophagic and inflammatory response of normal human skin cells (from donors of various ages). Relation between autophagy and resolin is assessed.

**Methods and Materials:** Inflammatory mediators were measured via Luminex Multiplex assay. Further, NHDFs were treated with an autophagy-activator and/or resolin D1. Following treatment, autophagic level was measured via LC3B staining in cells from two different aged donors (young and old).

**Results:** Following treatment with an autophagy-activator and/or resolin D1, a marked increase in autophagy was observed. The relationship between resolution mediators and autophagy was established.

**Conclusion:** As established by our experiments, there is a specific relationship between autophagy and resolvins, more specifically, with resolin D1. To our knowledge, this is the first report showing an increase of autophagy due to the presence of resolin D1. This shows how these two mechanisms, autophagy and resolution phase, are linked in order to protect skin against long-lasting inflammation.