

ACNE, ROSACEA, AND RELATED DISORDERS (INCLUDING HIDRADENITIS SUPPURATIVA)

## ANTI-INFLAMMATORY AND ANTIOXIDATIVE EFFECTS OF ALPHA LIPOIC ACID ON CULTURED HUMAN SEBOCYTES

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**Introduction:** Oxidative stress is linked to the pathogenesis of acne. It is reported that oxidative stress of patients with acne was higher than healthy people. On the other hand, antioxidant activities have been found to be lower in patients with acne.

**Objective:** We performed this study to investigate the effect of lipoic acid on the cultured human sebocytes.

**Materials and Methods:** We treated cultured human sebocytes with alpha lipoic acid 50  $\mu$ M and/or dihydrotestosterone 10<sup>-7</sup> M or lipopolysaccharide 5  $\mu$ g/ml. Real time polymerase chain reaction and enzyme-linked immunosorbent assay were done to analyze the expression of inflammatory biomarkers including IL-1 $\beta$ , IL-6, IL-8 and TNF- $\alpha$  after treatment of cultured human sebocytes with alpha lipoic acid and/or dihydrotestosterone or lipopolysaccharide. Sebum production was measured in cultured human sebocytes after treatment with alpha lipoic acid and/or dihydrotestosterone. Lipid peroxidation was also assayed in cultured human sebocytes after treatment with alpha lipoic acid and/or dihydrotestosterone and after treatment with alpha lipoic acid and/or lipopolysaccharide.

**Results:** Treatment of cultured human sebocytes with alpha lipoic acid decreased the expression of IL-1 $\beta$ , IL-6, IL-8 and TNF- $\alpha$ . Alpha lipoic acid decreased the expression of IL-1 $\beta$ , IL-6, IL-8 and TNF- $\alpha$  even after treatment of cultured human sebocytes with dihydrotestosterone or lipopolysaccharide. Alpha lipoic acid also decreased lipid peroxidation in cultured human sebocytes, and even after treatment with dihydrotestosterone or lipopolysaccharide.

**Conclusions:** Lipoic acid is an antioxidant against sebum peroxidation. In addition, lipoic acid acts as an anti-inflammatory agent in cultured human sebocytes.