

## Abstract

Atopic Dermatitis (AD) is an inflammatory skin disease characterized by skin rashes and lesions. Downregulation or upregulation of various genes that contribute to the pathogenesis of AD makes it a complex disease. The main contributing genes are the skin barrier genes, *FLG*, *IVL*, and inflammatory genes, *TSLP*, *TARC*, *IL-33*, *IL-25*, *MDC*, and *CTACK* which are being investigated in this study. The current treatment for AD is still not as effective as it is due to the occurrence of side effects. *Calophyllum inophyllum* oil has become a potential treatment for AD due to its antioxidant and anti-inflammatory properties. The ethanol-miscible extract (EME) of *C. inophyllum* was used as a treatment in induced HaCat cells with TNF- $\alpha$  and IFN- $\gamma$  as AD models to discover the expression of AD gene-related towards EME of *C. inophyllum*. It has been found that EME of *C. inophyllum* is successful to upregulate the expression of the skin barrier gene (*FLG* and *IVL*) and downregulate several expressions of the Inflammatory gene (*TSLP*, *IL-33*, and *MDC*) to the normal condition.

Keywords: Atopic Dermatitis, *Calophyllum inophyllum*, Ethanolic Miscible, Gene expression, HaCat Cells