

## Evaluation of the efficacy of ethanol leaf extract of *Helichrysum petiolare* Hilliard and B.L. Burt against skin aging

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To determine the efficacy of *Helichrysum petiolare* ethanol leaf extract against skin aging. The cytotoxic potential of the plant extract towards human dermal fibroblast (MRHF) cells was determined by Hoechst 33342/Propidium iodide (PI) staining. Effect of *H. petiolare* extract on reactive oxygen species (ROS) levels in MRHF cells and NO (nitric oxide) production in RAW

246.7 cells activated by LPS (lipopolysaccharides) was investigated. The inhibitory effect of the extract against collagenase, elastase, tyrosinase and protein glycation was also evaluated. The extract did not display cytotoxicity towards MRHF cells at the tested concentrations when compared to the trend seen with the untreated control ( $p < 0.05$ ). The extract caused a significant decrease ( $p < 0.05$ ) in ROS levels in MRHF cells in a concentration-dependent manner and also demonstrated a reduction in NO production in RAW cells with no toxicity. Furthermore, the extract produced a weak inhibition of collagenase, elastase and tyrosinase activities when compared to the corresponding positive controls, but effectively inhibited protein glycation at the tested concentrations. The findings suggest that the ethanol leaf extract from *H. petiolare* has the potential to mitigate skin aging and therefore needs to be further investigated for possible clinical applications.

**Keywords:** Cytotoxicity, Efficacy, *Helichrysum petiolare*, MRHF cells, Oxidative stress, Protein glycation; skin aging