GLOBAL SKIN HEALTH

MACROCYSTIS PYRIFERA KELP FERMENT: ANTI-INFLAMMATORY AND PRO-RESOLUTION PROPERTIES IN SKIN CELLS

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Introduction: Inflammation, acute or especially chronic, is a source of accelerated skin aging. Sub-clinical (chronic and acute) inflammation causes extensive damage in the skin that accumulates over time, resulting in loss of function (elasticity, firmness). Three phases of inflammation have been recognized: initiation, amplification and resolution. Addressing these three phases is essential to avoid skin damage.

Objective: An important pathway in the initiation of inflammation is the release of arachidonic acid via the action of the secretory phospholipase A2 (sPLA2) enzyme, while activation of the transcription factor NFκB is an important step in the amplification of the inflammatory response. The resolution of inflammation is an actively coordinated dynamic process that attenuates inflammation, and helps with the restoration of skin integrity and repair. We will assess the anti-inflammatory and pro-resolution activity of a Macrocystis pyrifera ferment.

Materials and Methods: An assay utilizing human SPLA2 and fluorescent substrate was used to evaluate the inhibitory activity of the ferment. Normal human epidermal keratinocytes were exposed to 20 mJ/cm2 UVB to evaluate the activation of NFkB. Human mononuclear cells were pretreated for 24 hours prior to the initiation of an inflammatory response to evaluate the production of pro-resolution mediators. A cell migration model utilizing normal human dermal fibroblasts was used to evaluate the migratory capacity of cells treated with the ferment.

Results: The kelp ferment was found to be an inhibitor of sPLA2 as well as an inhibitor of NFkB activation. The treatment of mononuclear cells resulted in increased production of the pro-resolution intermediates, 15-hydroxyeicosatetraenoic acid and 17-hydroxydocosahexanoic acid. Fibroblast migration was found to be enhanced by the kelp ferment.

Conclusion: We have shown that the kelp ferment is effective in addressing all three phases

of inflammation and in enhancing fibroblast migration. Together these effects may help in a faster restoration of tissue integrity.