Abstract

Background: Wound healing is a physiological and highly organized complex process leading to tissue repair after an injury. A dynamic interplay between cellular and extracellular components involved in the repair process is essential for regular wound healing, results in a restoration of tissue integrity. Samoa Islands in the South Pacific are considered one of the most preserved places in the world. Local exotic plants are widely used by indigenous people to treat various skin injuries. However, the healing skills of these traditionally used plant species have been poorly studied from a scientific point of view. ***Methods:*** We analysed the effects of 16 Samoan plant extracts for their potential wound healing properties, by assessing dermal fibroblast proliferation and migration. For the evaluation of these cellular events *in vitro* DNA quantification and scratch wound assay were employed. ***Results:*** Screening of all extracts showed various effect on cell proliferation and migration with a concentration dependence. Particularly, at the highest concentration 512 μg/ml were cytotoxic 8 extracts, while at the concetration 32 μg/ml expressively reduced fibroblast proliferation 3 extracts. The effects on cell migration correlated with the proliferation assay results. Based on the screening data, 3 extracts derived from plant species *Phymatosorus scolopendria, Kleinhovia hospita* and *Premna serratifolia* have been chosen for further examination at lower concentrations 1 – 16 μg/ml, and statistically analysed. Significant stimulation of *in vitro* cell proliferation and migration by the selected extracts in majority of cases was observed, whereas the most significant outcomes provided particularly *Kleinhovia hospita* extract. ***Conclusions:*** The results suggested, that selected extracts of *Phymatosorus scolopendria, Kleinhovia hospita* and *Premna serratifolia* significantly induce wound healing properties, represented by dermal fibroblast proliferation and migration, and might be used as new therapeutical agents in a potential drug development for treatment of wounds.

Keywords: wound healing, cell proliferation, cell migration, plant extracts, traditional medicine, Samoa Islands, dermal fibroblasts