

Abstract

Human skin is a primary barrier against environmental pollutants and infectious agents, including UV radiation, which contributes to photoaging. Sacha inchi, a plant with bioactive compounds like phenolic and flavonoids, has potential as a photoprotective agent against UVB radiation. However, studies have not investigated its potential as an alternative material source for protecting skin from UVB-induced damage. This research aims to evaluate the cytoprotective effects of Sacha inchi ferment filtrate against UVB-induced damage in human keratinocytes (HaCaT cells). Characterization of Sacha inchi ferment filtrate including total protein concentrations, total phenolic content, total flavonoid content, and FRAP assay was done. The cytotoxicity and cytoprotective evaluation was done with MTS assays to quantify the cell viability. The protein concentrations of fermented Sacha inchi showed significant increase while both total phenolic and flavonoid content did not exhibit significant differences compared to the Sacha inchi milk. Sacha inchi samples that contained sediment showed higher cytotoxicity due to the presence of bioactive compounds in the sediment. Higher cytoprotective ability was also shown in non-fermented Sacha inchi milk with sediment. Despite higher protein content, both fermented Sacha inchi samples did not show a higher cytoprotective effect than non-fermented Sacha inchi milk. Further studies on Sacha inchi ferment filtrate should be done such as compound characterization, comet assay, and gene expression to provide more information on the bioactive compounds contained in the ferment filtrate and pathway that causes cytoprotective effect

Keywords: Sacha inchi, UVB radiation, photoaging, HaCaT cells