

Identification of Chemical Constituents in “Wathupalu” (*Mikania cordata*) Plant Extracts in Wound Healing Using Scratch Assay

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Mikania cordata (Burm.) Robinson is a fast-growing herbaceous vine that belongs to the family Asteraceae. Traditional medicine uses freshly ground *M. cordata* leaves for cuts and wounds. This study aimed to evaluate the wound healing potential of *M. cordata* leaves and identify the potential chemical constituent/s responsible for this effect. Leaf extracts were prepared separately by sonicating dried and powdered leaves in distilled water, ethanol, methanol, and dichloromethane (DCM). The Vero cell line was used to examine the wound healing potential. Cells were treated with a series of concentrations of different *M. cordata* extracts to determine the toxicity using an MTT assay. More than 70% of viability was found in all extracts within the concentration range of 10 - 1000 µg/mL and cell viability exceeded 100% in some concentrations (Ethanol 500 µg/mL) indicating a cell proliferation effect. Therefore, the scratch assay was performed for 100, 500, and 1000 µg/mL concentrations to examine the wound healing ability of the extracts while monitoring scratch closure for 24 and 48 hours. Aqueous, ethanol, methanol and DCM extracts of *M. cordata* showed significant ($P \leq 0.05$) wound healing properties at 24 hours and the level of significance decreased at 48 hours for all four concentrations tested. The cells treated with 100 µg/mL of ethanol extract for 24 hours showed the highest percentage of wound closure (82%) compared to the untreated cells ($P \leq 0.001$). This indicated the presence of compound/s responsible for wound healing in all 4 extracts. A Single spot ($R_f - 0.27$) was observed in thin layer chromatography (TLC) for the aqueous extract dissolved in DCM. Fourier-transform infrared (FT-IR) spectroscopy analysis of this compound showed the possibility of an alcohol group, methyl groups and alkyl stretches. Ultraviolet visible (UV-vis) spectroscopy suggested the compound to be an alkaloid with unsaturated C stretches.

Keywords: *Mikania cordata* (Burm.) Robinson, wound healing, MTT assay, scratch assay, UV-Vis spectroscopy, FT-IR spectroscopy, TLC