

Wound Healing Properties of Ash Plantain (*Musa paradisiaca*) Rhizome

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Wound healing is a complex process that includes many biological and physiological events. Chronic wounds are often characterized by microbial infections, biofilm formation, and high levels of oxidative stress in the wound microenvironment. The use of antibacterial can prevent bacterial infections, and antioxidants reduce the oxidative stress of the compounds and accelerate the healing. Hot water extract of *Musa paradisiaca* (ash plantain) rhizome (MP) is commonly used by traditional medical practitioners to wash chronic wounds and is believed to accelerate the wound healing process. The present study was conducted to investigate whether there is any antibacterial and antioxidant effect in MP rhizome that may help the wound healing process. MP rhizome was sequentially extracted with hot hexane, chloroform, ethyl acetate, and methanol. The methanol extract was further partitioned with dichloromethane and ethyl acetate. Agar well diffusion method was used to investigate the potential antibacterial effect of MP extracts against four bacterial strains *Pseudomonas aeruginosa* (ATCC 27853), *Staphylococcus aureus* (ATCC 6538), *Escherichia coli* (ATCC 25922), and Methicillin-resistant *Staphylococcus aureus* (clinical isolate, MRSA). Total phenolic content, flavonoid content, DPPH radical scavenging activity, and lipid peroxidation inhibition activity (TBARS) of each fraction was tested for antioxidant activity. Ethyl acetate fraction obtained from the hot methanol extract showed significant growth inhibition of *Staphylococcus aureus* and MRSA strains (with the inhibition zone diameters of 10.3 ± 0.5 mm, $n = 3$ in each case). The highest DPPH radical scavenging and lipid peroxidation inhibition activities were shown by the same ethyl acetate fraction with the IC_{50} of $6.54 \pm 0.33 \mu\text{gml}^{-1}$ and $146.48 \pm 0.82 \mu\text{gml}^{-1}$, $n = 3$, respectively, subsequent to its high total phenolic content ($(21.19 \pm 0.09)\%$ W/W Gallic acid equivalent, $n = 3$). The findings of this study provide scientific evidence for the ethnomedical use of *Musa paradisiaca* (ash plantain) rhizome in chronic wound treatments.

Keywords: Antibacterial, Antioxidant, Chronic Wound, Wound Healing