

Antibacterial Activity of Aloe vera (*Aloe barbadensis miller*) on selected Human Pathogens.

Nor Faizah Nabilah Mohamad Atan^a, Wan Razarinah Wan Abdul Razak^{a*}

Structured Abstract

Background: Aloe vera is effective and is used in abundance as a treatment for various skin conditions when used topically. Aloe vera is widely used not just because of its effectiveness but it grows very easily, making it easy to attain. The application of Aloe vera is less complicated compared to other herbal plants in terms of preparation and usage. The leaves of the Aloe vera consist of the rind, the inside, which is the pulp, and the acibar containing aloin. Therefore, this study aims to observe the effects of Aloe vera in different solvents on the selected human pathogens and the effectiveness of this medicinal plant in reducing or eradicating the microbial activity of selected microorganisms.

Methods: The Aloe vera gel and the rind were separated. The rinds were dried in the oven at 45°C for 3 days. The gel and the rind were soaked in different solvents which were sterile distilled water, DMSO, Methanol, and Ethanol. These solvents were removed through a rotary evaporizer before different concentrations were produced for antimicrobial susceptibility tests. Well diffusion method was used for the AST.

Results: This study shows that 70% Ethanol and 70% Methanol managed to produce zones of inhibitions. Among all the bacteria tested which were *E. coli*, *S. aureus*, and *B. cereus*, only *P. aeruginosa* managed to show the presence of zone inhibitions. The ring formations were present around the well after being tested with 70% Methanol with the concentration of 5000 mg/mL, 2500 mg/mL, and 1250 mg/mL. Besides, there were ring formations when tested with 70% Ethanol with the concentration of 3000 mg/mL, 1500 mg/mL, and 750 mg/mL.

Conclusion: In conclusion, 70% Ethanol extracts of Aloe vera gel exerted better antibacterial activity compared to 70% Methanol, 10% DMSO and sterile distilled water. The polarity of Ethanol helps in dissolving the bioactive compounds whether the compound in the Aloe vera gel is lipophilic or hydrophilic. Ethanol and Aloe vera have antimicrobial properties, therefore the synergy between these compounds can exert better antimicrobial activity.

Keywords: Solvents, Aloe vera gel, Aloe vera rind, Antimicrobial Susceptibility Test

*Correspondence: razarina408@uitm.edu.my

^a School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia