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Antibacterial Activity of Aloe Vera Extract Against *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

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Structured Abstract

Background: One of the most well-known therapeutic plants is *Aloe barbadensis* Miller, often known as Aloe vera. It is a member of the *Liliaceae* family. Numerous studies have shown that Aloe vera has a wide range of beneficial effects, including anti- inflammatory, immune- boosting, free- radical-neutralizing, immune- modulating, and cell- growth- promoting qualities. Furthermore, Aloe vera extracts have been reported to have antibacterial, antiviral, and antifungal properties. Aloe vera has been used for many years to treat a variety of skin conditions, including eczema, burns, and wounds. Aloe vera plant is claimed to have anti-inflammatory and pain-relieving properties, particularly in its central region.

Methods: The research is to determine the antibacterial effect exhibited by Aloe vera extract of bacterial cell in term of viability reduction, including the size of the zones of inhibition, the percentage of inhibition of diameter growth (PIDG), the minimum inhibitory concentration (MIC) and minimal bacterial concentration (MBC). These results suggest that Aloe vera extract with ethanol can be used as antibacterial agent on human pathogens for medication, cosmetic and food purposes.

Results: The antibacterial activity of ethanolic extract of Aloe vera was studied on *Staphylococcus aureus* and *Pseudomonas aeruginosa* at different concentrations of 65, 70, 75, 80, 85, 90, 95, and 100% using the disc diffusion method. The determination of PIDG values for both bacteria resulted negative results, indicating that Aloe vera extract inhibits growth less effectively than gentamicin. The microbroth procedures were used to assess the minimum inhibitory concentration (MIC) of the Aloe vera extracts on the test organism, and the results showed that the MIC ranged from 50 to 100 % (v/v). The minimum bactericidal concentration (MBC) of the extract on both bacteria were determined with identical results, 100 % (v/v).

Conclusion: Aloe vera extracts showed significant antimicrobial activity when used against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The extract exhibits inhibitory effects, as indicated by the presence of zones of inhibition or reduced bacterial growth. The extent of the antibacterial activity may vary depending on factors such as extract concentration, extraction method, and specific bacterial strains tested.

Keywords: Aloe vera extract, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, antibacterial activity, percentage of inhibition of diameter growth (PIDG)

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