

Anti-Microbial Properties of Aloe Vera (*Aloe Barbadensis* Miller) Plant

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Abstract

Aloe vera (*Aloe barbadensis* Miller) is a medicinal plant widely recognized for its therapeutic, cosmetic, and pharmaceutical applications. The plant contains a variety of biologically active compounds, including anthraquinones, flavonoids, phenolic compounds, saponins, polysaccharides, vitamins, minerals, and enzymes, which contribute to its antimicrobial potential. This study focuses on the antimicrobial properties of *Aloe vera* and its possible effectiveness against selected pathogenic microorganisms. Extracts obtained from the gel and other parts of the plant have been reported to exhibit inhibitory activity against several Gram-positive and Gram-negative bacteria, as well as certain fungi. Compounds such as aloin, aloemodin, flavonoids, and other phenolic constituents are considered important contributors to antimicrobial activity. The antimicrobial effects may involve disruption of microbial cell membranes, inhibition of essential metabolic processes, and interference with microbial growth and proliferation. The activity of *Aloe vera* can vary depending on the plant part used, extraction method, concentration, geographical conditions, and microbial species tested. Owing to its natural origin and diverse phytochemical composition, *Aloe vera* has considerable potential for use in pharmaceutical formulations, topical preparations, food preservation, and other health-related applications. Further research is required to standardize extraction methods, identify the most active constituents, and establish effective and safe concentrations for practical antimicrobial applications.

Keywords: *Aloe vera*, *Aloe barbadensis* Miller, antimicrobial activity, medicinal plant, phytochemicals, antibacterial activity, antifungal activity, plant extract.

