

## **Antimicrobial Activity of Rhizome Plant (Ginger) Towards Pathogenic Strain: A Review**

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### **Structured Abstract**

**Background:** Historically, rhizome plants have been used in traditional medicine because of their potential medicinal properties. Plants naturally produce secondary metabolites with antimicrobial properties. Ginger, a well-known rhizome, is rich in bioactive compounds like gingerols and shogaols, showing evidence of antimicrobial activity. This article reviews studies from 2018–2022 aims to bring emphasis on the various potential of ginger as an alternative medicine, with a focus on the increasing issue of antibiotic, antifungal resistance and the crucial part that biofilm development acts in sustaining chronic infections.

**Methods:** This study was conducted via a research review. The sources of the data were particular searches published between 2018 and 2022 in ScienceDirect, PubMed, and Scopus. Every data was located, and the screening process was carried out using the provided appropriate topic as a basis. Based on the qualifying conditions for this review research, only 52 papers out of 1735 publications were included.

**Results:** Ginger has shown promise as a natural antimicrobial agent, effective against various pathogens including *E. coli*, *S. aureus*, *P. aeruginosa*, *C. albicans*, and *C. auris*. The antimicrobial strength of ginger depends on the type of extract, with ethanol extracts demonstrating the highest efficacy due to their rich phytochemical content. Research on ginger's antibiofilm potential is still in its early stages, but available findings suggest its effectiveness against biofilms formed by *C. albicans*, *C. auris*, and *P. aeruginosa*. Compounds like 6-shogaol and gingerol show promise in inhibiting biofilm formation.

**Conclusion:** In conclusion, ginger demonstrated as a potential natural antimicrobial agent effective against various bacteria and fungi, while early findings hint at ginger's ability to inhibit biofilm formation. The antimicrobial strength of ginger depends on the type of extract. Further studies are required to optimise extraction methods and formulations, solidifying ginger's potential in diverse antimicrobial applications.

**Keywords:** *Zingiber officinale Roscoe*, antimicrobial, antibacterial, antifungal, antibiofilm.

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