

## Phytochemical Screening, Antibacterial Activity of Methanolic Extract of *Syzygium aromaticum* (Clove Buds) Activity on Oral Pathogens

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**Abstract :** This study investigates the phytochemical constituents and antibacterial activity of methanolic extracts from *Syzygium aromaticum* (clove buds) against common oral pathogens. The extraction process was performed using methanol, followed by qualitative phytochemical screening to identify bioactive compounds such as alkaloids, flavonoids, tannins, saponin, glycosides, steroids, and anthraquinones. The antibacterial efficacy was evaluated using the agar well diffusion method against several oral pathogens, including *Staphylococcus epidermidis*, *Staphylococcus aureus*, *Streptococcus mutans*, *Streptococcus pneumoniae* and *Enterococcus faecalis*. Results indicated that the methanolic extract exhibited significant antibacterial activity, with inhibition zones correlating with the concentration of the extract. The highest inhibition was observed on *S. epidermidis* (25 mm), *E. faecalis* (22.5 mm), *S. aureus* (21.5 mm), *S. pneumoniae* (19 mm) and *S. mutans* (17 mm) at the highest concentration (500µg/ml). While the lowest inhibition was observed at the lowest concentration (62.5 µg/ml), on *S. mutans* (7 mm), *S. aureus* (13.5 mm), *S. pneumoniae* (14 mm), *E. faecalis* (14 mm) and *S. epidermidis* (16 mm). The positive control (Ofloxacin)-used during the experiment-shows lesser activity on some tested oral pathogen (*S. epidermidis* and *E. faecalis*) as compared to that the extract and thus, the extract may serve as an alternative source of treatment of infections caused by *Staphylococcus epidermidis* and *Enterococcus faecalis*. Phytochemical analysis revealed a rich profile, suggesting a potential for clove extracts as natural antimicrobial agents in dental care. These findings support the therapeutic use of *Syzygium aromaticum* in managing oral infections and highlight its importance in phytomedicine.

**Keywords :** phytochemical, antibacterial, mentholic, clove buds

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