

# Oral Care Products against Oral Pathogens

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## **Abstract:**

Antimicrobial agents can be extracted from ethnomedicinal plants and have been used as a chemotherapeutic agent to improve oral health. This study aims to evaluate the antimicrobial efficacy of combined toothpaste with plant extracts and the relation between the commercial toothpaste to its price and human age as well. A total of 59 oral isolates obtained from different selected individuals aged from 3 to 60 years were isolated, purified, and tested against four different plant extracts namely, *Piper nigrum*, *Nigella sativa*, *Cinnamomum zeylanicum*, and *Elettaria cardamomum* for antimicrobial susceptibility profile. About 10 different commercial toothpastes (different brands and prices) were collected from the market, and the combined action of the plant extract and toothpaste was studied against oral isolates. The higher bacterial population was found in the 2<sup>nd</sup> age group of 20–40 years than other two groups, with approximately 44%. The combined action of ethanolic plant extract (alone) of each plant against oral isolates showed higher antimicrobial effect profile up to 32.20% when combination A (Ci/Ca) was added. In addition, the combined action of plant extracts with toothpaste improved the antimicrobial susceptibility up to 100% in the case of combination A against oral isolates of 2<sup>nd</sup> age group, followed by combination C and then combination B failed to improve the antimicrobial efficacy on all age groups. The effectiveness of toothpaste was neither related to the price or the age group. The major constituent compounds of plant extracts were identified using GC-MS and demonstrated by TLC analysis, which was stearic and palmitic acids exhibited high antimicrobial efficacy against oral isolates under study. Finally, the plant extract combination with the toothpaste was recommended due to its high antimicrobial efficacy against oral isolates and the effectiveness of toothpaste was not related to the market price.

**Keywords:** *Cinnamomum Zeylanicum*; *Piper Nigrum* *Nigella Sativa*

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