





Table 1 shows the mean PR of *S. mutans*. There was a significant PR between the pre-rinse and post-rinse samples. Essential oils showed highly significant antibacterial activity compared with chlorhexidine and iodine against *S. mutans*. Essential oils (75.6%) and chlorhexidine (71.6%) showed antibacterial activity against *Streptococcus mutans* with no significant difference. Iodine showed least PR (65%) against the species when compared with the other two extracts.

### DISCUSSION

The changes in the microbial activity before and after use of experimental mouthwashes were assessed because quantitative actions play a major role in the caries disease process. The time interval of 10 mins was selected for convenience and to evaluate the effect of mouthwash over a period of time.

Chlorhexidine gluconate is charged positively and shows high affinity for negative ions found in cell membranes of microorganisms. It indirectly affects the enzymatic function of dehydrogenase and adenosine triphosphatase present in the cell wall of bacteria thus causing disruption of cell membrane<sup>8</sup>. It is evident in this study that the chlorhexidine showed a definite reduction in the microbial activity resulting in effective anticariogenicity. However, chlorhexidine has reports of causing discoloration of teeth<sup>9</sup> and an unpleasant taste<sup>10</sup>.

The evidence of efficacy of synthetic antimicrobial agents as mouthwashes remains uncertain for higher caries risk individuals. Hence, two medicinal plants of known and higher inhibitory action against common cariogenic pathogens were selected for this study to compare its efficacy with chlorhexidine. In this study, essential oils mouthrinse proved to be an effective anticaries mouthwash owing to its ability to inhibit *S. mutans*.

The antimicrobial efficiency was highest for essential oils followed by chlorhexidine and chlorhexidine. The aqueous extract of essential oils strongly inhibits the growth of *S. mutans*. The essential oil combination and 0.2% Chlorhexidine had been shown to have an inhibitory effect on plaque, gingivitis and growth of *S. mutans*. Thus, herbal extract can be suggested for management of dentinal caries as their action on *Streptococcus mutans* is more than chlorhexidine.

### CONCLUSION

The aqueous extract of essential oils was as effective anticaries mouthwash as chlorhexidine and iodine mouthrinses. Future studies have to be aimed at increasing substantivity of herbal mouthrinses so that a potential alternative to 0.2% Chlorhexidine alone with intense antimicrobial activity and cost effective preventive strategies for caries can be used.

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