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Anti-plaque efficacy of herbal mouthwashes as compared to synthetic mouthwashes in orthodontic patients: a randomized controlled trial

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Aim: The present study compares the antiplaque effects of two herbal mouthwashes (*Salvadora persica* and *Azadirachta indica*) with two synthetic types (*Chlorhexidine* and *Cetylpyridinium*).

Design: In this double-blind, randomized controlled trial, 100 patients undergoing orthodontic treatment was first scaled and polished for baseline zero plaque score. In the first phase, they were given oral hygiene education and provided a standard tooth paste to be used twice daily for a period of three weeks. In the second phase, following scaling and polishing, they were randomly allocated to use one of the four types of mouthwashes (A=Chlorhexidine, B=Cetylpyridinium, C=Extracts of *Salvadora persica* miswak and D=Extracts of *Azadirachta indica* miswak) along with previously instructed tooth brushing protocols for a further period of three weeks. Plaque accumulation was scored according to modified bonded bracket plaque index at the start, after tooth brush-paste trial and at the end of mouthwash trial. Paired t-test was used for comparison of pre- and post-plaque index in all groups. Comparison analysis of mean difference of post-plaque index between and within groups was performed by multivariate analysis of variance MANOVA and Post hoc Tukey test.

Results: A total of 80 participants completed the study; among them, 17 were male and 63 were female. There was significant reduction in mean plaque scores after using mouthwashes in all the 4 groups at follow-up when compared to first plaque score ($p=0.009$). A statistically significant ($p=0.016$) reduction of plaque score was found in Group C (*Salvadora persica*) when compared with the CHX group. Group D (*Azadirachta indica*) also had higher reduction when compared with CHX and CPC but it was not statistically significant ($p=0.092$ and $p=0.292$). However, no significant difference was seen between CHX group and CPC group with respect to mean reduction in plaque scores ($p=0.934$).

Conclusion: Both types of miswak derived mouthwashes can be a good substitute for synthetic types and can be recommended, especially for patients on orthodontic treatment, as safer, cost effective and well tolerated mouthwashes.

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