



ORIGINAL RESEARCH PAPER

Dental Science

AN EQUIVALENT ASSESEMENT OF EFFICACY OF PUNICA GRANATUM AND CHLORHEXIDINE ON PLAQUE AND GINGIVAL DISEASES

KEY WORDS:
CHLOROHEXIDENE,
GINGIVITIS, PLAQUE,
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MOUTHWASH.

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ABSTRACT

Background: The utilization of conventional methods for oral hygiene maintenance has a quite long history, with across the board use in rustic regions of Africa, South America and the Indian subcontinent till date. In spite of the fact that dental medicinal services experts and everyone, particularly in the urban regions can have the enticement of out-properly dismissing them as ineffectual, the use of these common items depends on reliable logical standards. **Aim:** The current article is a short study on comparison of the two major mouthwashes used namely pomegranate and chlorohexidine mouth wash on plaque and gingival efficacy. **Material and methodology:** Twenty subjects determined to have chronic generalized gingivitis were chosen and haphazardly separated into two gatherings: Group 1 – Pomegranate mouthwash and Group 2 – Chlorhexidine mouthwash. Punica granatum (pomegranate) mouthwash was readied utilizing crude Punica granatum organic product. Patients were told to utilize the recommended mouthwash for 15 days. Clinical assessment was embraced utilizing the gingival index, the plaque index, and bleeding on probing at standard, 7 days, and 15 days. **Results:** The clinical investigation observed significant improvement in gingival status in both (P<0.05). Subjects utilizing Punica granatum mouthwash demonstrated significant improvement in bleeding and gingival disease score as contrasted and chlorhexidine. Conversely, Punica granatum was demonstrated not to be so successful in lessening plaque scores. Chlorhexidine despite everything stays as a standard in the decrease of plaque in subjects with gum disease. **Conclusion:** Punica granatum mouthwash is beneficial in improving gingival status because of its significant styptic activity, with sufficient decrease in plaque scores.

INTRODUCTION:

Gingival disease is a constant fiery procedure restricted to the gingiva without either attachment loss or alveolar bone loss. It is one of the most regular oral disease, influencing over 90% of the populace, paying little mind to age, sex, or race. [1] Plaque is the essential etiological factor in gingival inflammation. [2] So, every day and powerful supragingival plaque control utilizing tooth brushing and dental floss is important to capture its movement to periodontitis. Albeit mechanical plaque control techniques have the potential to keep up satisfactory degrees of oral hygiene, contemplates have indicated that such strategies are not being utilized accurately. [1] Therefore, a few chemotherapeutic specialists, for example, triclosan, fundamental oils, and chlorhexidine have been created to control bacterial plaque.

Among these, chlorhexidine has been the highest quality level since ages due to its significant antibacterial and antiplaque action. As an outcome of the reactions of chlorhexidine, different home grown items (like Astronium urundeuva, Calendula, Aloe vera, Curcuma zedoaria) have been tried with compelling outcomes. Among these, one of the ongoing home grown items is Punica granatum, which actually means seeded ("granatus") apple ("pomum").

Punica granatum Linn has a place with family Punicaceae, generally known as "pomegranate." It is a bush local from Asia where a few of its parts have been utilized as an astringent, haemostatic, and for diabetes control. [3] The genus name, Punica, was the Roman name for Carthage, where the best pomegranates were known to develop. The point of the present work was to explore the conceivable adequacy of hydroalcoholic extract (HAE) from Punica granatum natural product as an antiplaque and antigingivitis agents when contrasted and chlorhexidine.

MATERIAL AND METHODOLOGY:

This examination was directed on 20 willful patients from both genders (10 females and 10 guys), age extending from 14 to 25 years, with moderate gingival disease. Patients with systemic disorders, subjects under antimicrobial treatment, smokers, and pregnant ladies were excluded from the examination. People were given a similar kind of toothbrush and toothpaste with normalized brushing procedure guidelines. After careful scaling and cleaning, the subjects were randomly dispersed into following 2 groups:

Group 1 (n = 10): Subjects were told to utilize 10 ml of Punica granatum mouthwash twice day by day for 15 days.

Group 2 (n = 10): Subjects were told to utilize 10 ml of 0.2% chlorhexidine mouthwash (HEXIDINE by ICPA) twice day by day for 15 days.

PREPERATION OF PUNICA GRANATUM MOUTHWASH:

The HAE was set up from entire new organic products (4-5 natural products) that were cut into little pieces and mixed with a blend of ethanol and refined water (1 : 1, v/v). The material was filtered through a few layers of gauze, and evaporated at 60°C to 33% of its unique volume or until all the ethanol dissipated. The volume was reestablished with refined water, and 1 ml sample was totally evaporated in the oven, in order to get the insoluble residues/ml (used to express the final hydroalcoholic concentrations, which extended between 50 and 60 mg/ml), which was additionally used to alter the convergence of mouthwash.

Information was gathered at benchmark, 7 days, and 15 days using the indices, i.e. Plaque index by Turskey Gilmore Glickman modification of Quigley Hein plaque index, [4] Gingival index by Loe and Silness[5] and Bleeding on

probing by Ainamo and Bay.[6]

STATISTICAL ANALYSIS:

Student t test was utilized for between gathering and intra-gathering correlation. P value was evaluated at <0.05.

RESULTS:

An aggregate of 20 members (10 females and 10 guys) partaken in the examination with the mean period of 22.3 ± 0.2334 with no dropouts.

Gingival Index

On analyzing the gingival index, it was seen that both the groups prompted critical decrease in gingival scores (P<0.05). Mean decrease in pomegranate group was from 1.753 ± 0.1675 at standard to 1.311 ± 0.1081 at 7 days and 0.828 ± 0.1823 at 15 days with % decrease of 27.74% and 43.76%, individually (P<0.05). Altogether less decrease was found in chlorhexidine gathering, i.e., from 1.641 ± 0.1761 at standard to 1.293 ± 0.1686 at 7 days and 0.991 ± 0.2393 at 15 days with % decrease of 22.04% and 38.61%, individually (P<0.05). Henceforth, pomegranate mouthwash was a more viable antigingivitis agent as contrasted and chlorhexidine [Table 1 and Figure 1].

TABLE 1: GINGIVAL INDEX OF POMENGRANATE MOUTHWASH AND CHLOROHEXIDENE

GROUP	TIME	MEAN±SD	PERCENTAGE REDUCTION	P-VALUE
POMENG RANATE	BASELINE	1.753±0.1675	-	<0.05
	7 TH DAY	1.311±0.1081	27.74%	
	15 TH DAY	0.828±0.1823	43.76%	
CHLOROHEXIDENE	BASELINE	1.641±0.1761	-	<0.05
	7 TH DAY	1.293±0.1686	22.09%	
	15 TH DAY	0.991±0.2393	38.61%	

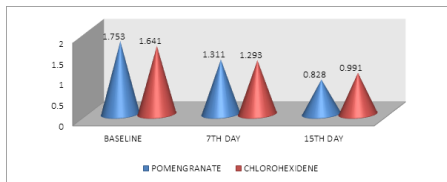


FIGURE 1: REPRESENTING COMPARISON OF GINGIVAL INDEX BETWEEN THE GROUPS

Plaque Index

Correlation of Plaque index among chlorohexidene and pomegranate mouthwash uncovered that fundamentally more decrease in plaque score was found in chlorhexidine group as compared to pomegranate [P<0.05; Table 2 and Figure 2]. Mean ± SD for pomegranate group has decreased from 3.950 ± 0.257 at baseline to 3.490 ± 0.4206 at 7 days and 3.068 ± 0.4587 at 15 days with % decrease of 11.34% and 23.13%, separately (P<0.05). Fundamentally more noteworthy decrease was found in chlorhexidine gathering, i.e., from 3.882 ± 0.4291 at gauge to 3.26 ± 0.4356 at 7 days and 2.667 ± 0.6360 at 15 days with % decrease of 16.02% and 31.3%, separately (P<0.05).

TABLE 2: PLAQUE INDEX OF POMENGRANATE MOUTHWASH AND CHLOROHEXIDENE

GROUP	TIME	MEAN±SD	PERCENTAGE REDUCTION	P-VALUE
POMENG RANATE	BASELINE	3.950±0.257	-	<0.05
	7 TH DAY	3.498±0.4206	11.34%	
	15 TH DAY	3.068±0.4587	23.13%	
CHLOROHEXIDENE	BASELINE	3.882±0.4291	-	<0.05
	7 TH DAY	3.26±0.4356	16.02%	
	15 TH DAY	2.667±0.636	31.3%	

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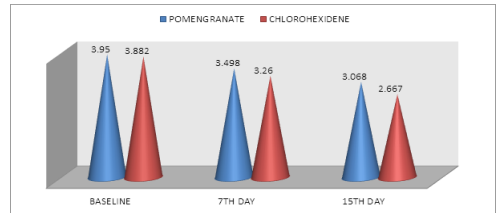


FIGURE 2: REPRESENTING PLAQUE INDEX COMPARISON BETWEEN THE GROUPS.

Bleeding on Probing

Investigation of bleeding on probing examined mean decrease in pomegranate group from 0.77 ± 0.0948 at gauge to 0.26 ± 0.850 at 7 days and 0.14 ± 0.060 at 15 days with % decrease of 67.2% and 82.8%, separately (P<0.05). Lesser decrease in draining scores was found in chlorhexidine gathering, i.e., from 0.781 ± 0.0952 at standard to 0.529 ± 0.0998 at 7 days and 0.293 ± 0.578 at 15 days with % decrease of 32.27% and 62.48%, individually (P<0.05). Pomegranate, being a significant styptic, prompts noteworthy decrease in bleeding on probing as contrasted to chlorhexidine [Table 3 and Figure 3].

TABLE 3: BLEEDING ON PROBING OF POMENGRANATE MOUTHWASH AND CHLOROHEXIDENE

GROUP	TIME	MEAN±SD	PERCENTAGE REDUCTION	P-VALUE
POMENG RANATE	BASELINE	0.77±0.0948	-	<0.05
	7 TH DAY	0.26±0.850	67.2%	
	15 TH DAY	0.140±0.060	82.8%	
CHLOROHEXIDENE	BASELINE	0.781±0.0952	-	<0.05
	7 TH DAY	0.529±0.0998	32.27%	
	15 TH DAY	0.293±0.578	62.48%	

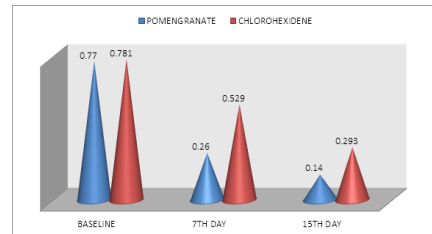


FIGURE 3: REPRESENTING THE COMPARISON OF BLEEDING ON PROBING BETWEEN THE GROUPS.

DISCUSSION:

Despite the fact that around 6,000 plants in India are utilized in natural medicines, little exploration has been directed on adequacy, security, and properties of natural items. Throughout the decades, not many investigations have been directed to show the clinical viability of Punica granatum. In the current investigation, it was shown that hydroalcoholic separate from pomegranate natural product applied a critical

decrease in clinical parameters.

Examination of plaque index esteems proposes that both the mouthwashes were useful in decreasing it however chlorhexidine diminished plaque scores to more noteworthy degree as analyzed with pomegranate mouthwash gathering. These discoveries are in concurrence with the examinations by Overholser et al.[7] and Haffajee et al.[8] In a microbiological study, Menezes et al. indicated that following brief mouth washing, more decrease in plaque was seen with Punica granatum (84%) as analyzed with chlorhexidine (79%),[3] repudiating our outcomes. The contrasts in the outcomes might be a direct result of distinction in the system utilized, i.e., rather than plaque index, settlement shaping units were thought about. Another reason could be that the length of their examination was very short and they recorded decrease simply after a solitary mouth washing meeting. Examination of gingival file scores uncovered that Punica granatum was progressively proficient in lessening gingival score and bleeding on probing also because of its solid styptic action. Similar results were accounted for by Hafajee et al.[8] An investigation by Salgado et al. in 2006 on 10% Punica granatum gel doesn't bolster our finding as this gel was not productive in forestalling supragingival dental plaque development and gingivitis.[1] Gel was put into tooth shield in a non-weakened structure; it might be hypothesized that gel solubilization with salivation would be fundamental for its antimicrobial move to make place. In our study, direct connection of spit to Punica granatum prompted satisfactory outcomes. In an inclination of searching for better antiplaque and antigingivitis operators with constrained symptoms as contrasted and chlorhexidine, different home grown items have been attempted with productive outcomes. Punica granatum is an ongoing home grown item utilized in field of dentistry. In this way, increasingly clinical and microbiological concentrates on a drawn out premise are required to know the exact viability of this item.

CONCLUSION:

Without cautious oral consideration, plaque and calculus will develop, bringing about gingival disease and conceivably advancing to periodontitis. Along these lines, different natural items have been attempted; have indicated promising outcomes with negligible symptoms. Likewise, their extra impact on fiery pathways and cancer prevention agent potential make them qualified to be utilized as successful antigingivitis operators. A blast of enthusiasm for the various remedial properties of Punica granatum over a decade ago has prompted various in vitro, creature, and clinical preliminaries. Our investigation presumed that Punica granatum is a superior antigingivitis operator than chlorhexidine, yet not as viable against dental plaque as chlorhexidine. The treatment with Punica granatum could be utilized as it is anything but difficult to plan, has significant styptic activity, and shows satisfactory decrease in plaque scores. Progressively clinical preliminaries are required to know the viability of Punica granatum and its preferred position over the model synthetic plaque control operator, i.e., chlorhexidine, which is as yet a best quality level for decrease of plaque scores.

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