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IRAQI METHOD IN PREPARING GREEN TEA AS MOUTH WASH

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ABSTRACT
Periodontitis is defined as "an inflammatory disease of the supporting tissues of the teeth caused by specific microorganisms or groups of specific microorganisms, resulting in progressive destruction of the periodontal ligament and alveolar bone with increased probing depth formation, recession, or both. Comparative study the effect of Iraqi method in preparing green tea as a mouth rinse in patient with chronic periodontitis adjunct with scaling and polishing. In this study, 25 patients with chronic periodontitis (study group) and 25 patient (control group) both received treatment in periodontal department of dentistry college, university of Bagdad by means of scaling and polishing, the study group in addition received the green tea mouth rinse in order to study its effect and compare it with the control group. Plaque indexes (PI) (41), gingival index (GI) (50) were measured to assess the periodontal condition for each patient. Green tea mouth-rinse users demonstrated less amount of plaque (study group) than in the (control group), and less gingival inflammation in the study group than in the control group. Green tea extract as a mouth rinse has an effect on the periodontal tissue health, by decreasing the amount of plaque and gingival inflammation with the aid scaling when compared to the control group.

KEYWORDS: Periodontitis, Teeth, Ligaments, Plauque index, Gingival index.

INTRODUCTION

Periodontitis is defined as "an inflammatory disease of the supporting tissues of the teeth caused by specific microorganisms or groups of specific microorganisms, resulting in progressive destruction of the periodontal ligament and alveolar bone with increased probing depth formation, recession, or both." The clinical feature that distinguishes periodontitis from gingivitis is the presence of clinically detectable attachment loss. This loss is often accompanied by periodontal pocket formation and changes in the density and height of subjacent alveolar bone[1]. Tea originated in China, possibly as long ago as 2700 BC. Drinking water, boiled for reasons of hygiene, was made more palatable by the addition of leaves from the tea plant[2]. In oriental cultures it has been widely believed for a long time that tea has medicinal efficacy in the prevention and treatment of many diseases. According to Chinese history, about 47 centuries ago emperor Sheng-Nong discovered tea accidentally in 2737 B.C. when some leaves fell in the boiling water producing distinct taste and fragrance and was named as heaven scent by the emperor [3]. The antimicrobial activity of tea, suggested for many years by anecdotal evidence, was first demonstrated almost 100 years ago in the laboratory by McNaught in 1906, a major in the British army medical corps, he showed that brewed black tea killed *Salmonella typhi* and *Brucella melitensis* and recommended that the water bottles of troops be filled with tea in order to prevent outbreaks of infections (typhoid fever and brucellosis) due to these The chemical composition of green tea is complex: Constituent Percentage (% of dried leaf) polyphenols 37.0 carbohydrates 25.0 Caffeine 3.5 Protein 15.0 Aminoacids 4.0 Lignin 6.5 Organic acids 1.5 Lipids 2.0 Ash 5.0 Chlorophyll 0.5), Green tea also contains Gallic acid (GA) and other Phenolic acids such as chlorogenic acid, caffeic acid, and flavonoids such as kaempferol, myricetin, and quercetin[6], it was indicated that a cup of green tea (2.5 g of green tea leaves/200 ml of water) may contain 90 mg of Epigallocatechin-3gallate (EGCG) ' Lin *et al*. in 2003 analyzed 31 commercial teas, and detected that the levels of EGC, Green tea (old leaves) ≥ green tea (young leaves) ≥ oolong tea ≥black tea. The amounts of catechins were always higher in green tea. EGCG and EGC were major catechins present with average contents of 7.358% and 3.955%, respectively; ECG and EC values are 0.910 and 3.556% respectively [7]. Green tea extract is approximately twice more antioxidant-active than vitamin C, the main attribution is supposed to be EGCG[8]. One study compared the antioxidant properties of various green tea compounds with those of vitamin C and vitamin E: the study concluded that green tea extracts had the equivalent antioxidant power found in 50 mg-275 mg of vitamin C and 156 mg-813 mg of vitamin E [9, 10]. In alkaline solutions (pH > 8) GTC (green tea catechins) are unstable; in acidic solutions (pH < 4), however, GTC shows excellent stability. The stability in alkaline solutions varies between four components of GTC in green tea extracts. Recent study demonstrates that EGCG and EGC are more unstable than EC and ECG in a basic solution, giving an explanation to the fact that EGCG and EGC do not circulate in the basic sodium phosphate buffer fluid of human body green tea has been associated with a reduction in the quantity and development of plaque on teeth, and reduction in the acid forming ability of plaque studies conducted over the last 20 years have shown that the green tea polyphenolic catechins, in particular(−)-epigallocatechin gallate (EGCg) and (−) -epicatechin gallate (ECg), can inhibit the growth

of a wide range of Gram-positive and Gram-negative bacterial species with moderate potency [10, 11]. *Camellia sinensis* polysaccharide has been reported to possess anti-adhesive activity against pathogens. The present study was designed to investigate whether hot water extracts obtained from green tea leaves might inhibit pathogen adhesion to human or mouse cell lines [12, 13, 14]. Green tea increases anti-inflammatory tristetraprolin and decreases pro-inflam[15, 16].

MATERIALS & METHODS

Human sample

Subjects included in the study were drawn from patients attending the department of periodontics in the college of dentistry, University of Baghdad. The study population included fifty subjects with chronic periodontitis with no history of any systemic diseases. The sample included both male and female having in consideration no pregnancy or any hormonal change that may effect the later in our study. Twenty five received green tea mouth rinse (study group) and the other twenty five were control group after scaling polishing for all of them they were followed by two visits the interval between them is one week.

Design of the study

All the individuals were informed the purposes of the investigation and consented to it is protocol. The sample was divided into two groups:

1-(chronic periodontitis/green tea mouth rinse user (study group) (group1) :

Twenty five subjects with chronic periodontits were assessed to examine there (plaque index (PI) (sillness and loe 1964), gingival index (GI) (sillness and loe, 1967) (1). And following scaling in the first visit they received the mouth rinse to use it two time daily and followed by asecond visit one week later to assess their PI and GI again.

2-(chronic periodontitis/ control group) (group 2):

Twenty five subject with chronic periodontitis were assesd to examine there (Plaque index (PI) (sillness and loe 1964), Gingival Index (GI) (s and l19) (1).After first visit of scaling the patients were followed by asecond visit to assess the same measurement above.

Material and instrument:

Instruments:

A-plane mouth-dental mirrors no.4.

B-Marquis colour coded probe

C-Cotton, gloves, and masks.

2. methods:

1 Clinical examination:

Oral examination was performed by the same examiner. The collected data include:-

1 Assessment of plaque index (PLI):

The plaque index was created for the assessment of the plaque accumulation on the basis of 0-3. The criteria are:

Score	Criteria
0	No plaque
1	A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may be seen in situ only after application of disclosing solution or by using the probe on the tooth surface.
2	Moderate accumulation of soft deposit within the gingival pocket, or the tooth and gingival margin which can be seen with the naked eye.
3	Abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin.

Assessment of Gingival Index (GI):

The gingival index was created for the assessment of the gingival condition and records qualitative changes in the gingival. It scores the marginal and interproximal tissues separately on the basis of 0-3. The criteria are

Score	Criteria
0	Normal gingival.
1	Mild inflammation-slight change in color and slight edema but no bleeding on probing.
2	Moderate inflammation-redness, edema and glazing, bleeding on probing.
3	Sever inflammation-marked redness and edema, ulceration with tendency to spontaneous bleeding.

Green tea mouth rinse preparation

After through washing of it, the Iraqi method in preparing the green tea mouth rinse involve the disolvement of 50 g in 250 ml for 24 h.

Then put it in a clean water bottle of 330 ml

So the concentration of (green tea mouth wash) is 10% ready to be used twice daily

Statistical analysis

Use spss.21. of windows 7 and use excel.10 for fig.

1-desicriptive statistic

-tables

-mean

-standard deviation (SD)

2-invertial statistic

- t-test

-person complex (r)

-p-value

If $p<0.05$ significant

If $p> 0.05$ non significant

If $p<0.01$ high significant

RESULT

Plaque index (PI):-

The descriptive statistics for plaque index were described in table (1), it was clearly shown that the means of plaque index of (periodontitis / Green tea mouth rinse user (study group) in first visit =1.479 and in second visit =0.388 compared with (periodontitis / control group) in first visit= 1.378 and in second visit=0.832.

TABLE 1: Descriptive statistics of plaque index in study group and control group

Visit	Study group		Control group	
	Mean	SD	Mean	SD
First visit	1.479	0.460	1.378	0.577
Second visit	0.388	0.344	0.832	0.519

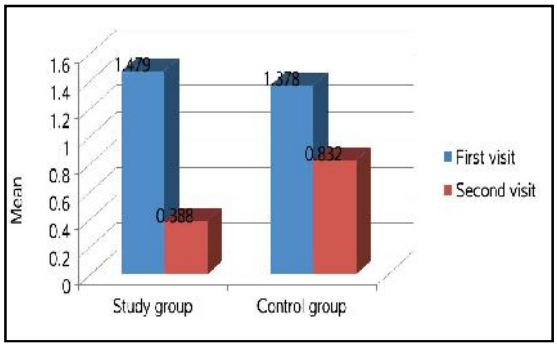

FIGURE 1: the relationship between plaque index in study group and control group patients (first and second visit)

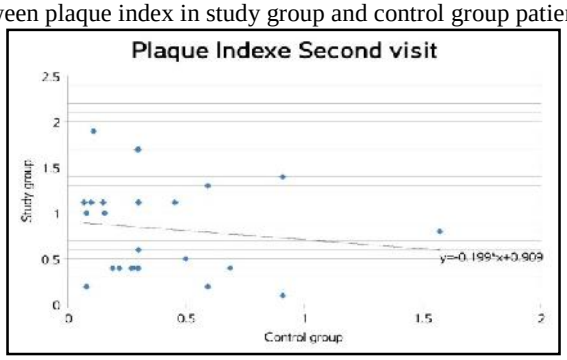

FIGURE 2: the relationship between plaque index in study group and control group patients (second visit only)

TABLE 2: inter group comparison of means of plaque index of study group and control group by using t-test

Group	First visit			Second visit		
	t-test	P-value	Sig	t-test	P-value	Sig
Study group& Control group	0.679	0.504	NS*	3.358	0.003	S**

*P>0.05 Non significant, **P<0.05 Significant

TABLE 3: t-test between First visit and Second visit of plaque index of study group and control group

Visit	Study group			Control group		
	t-test	P-value	Sig	t-test	P-value	Sig
Between First visit & Second visit	10.146	P<0.01	HS	17.537	P<0.01	HS

*P<0.01 High significant

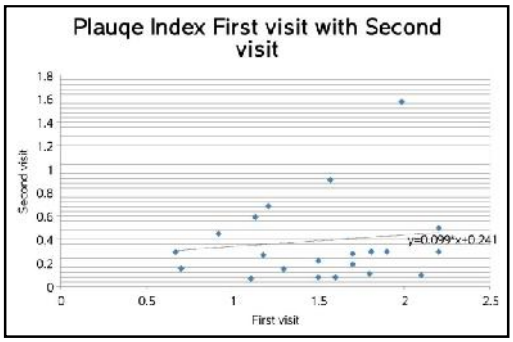

FIGURE 3: the relationship between plaque index in the first visit as compared with the second visit in study group

Gingival index (GI):

The descriptive statistics for gingival index were described in the table (4), it was clearly shown that the means of gingival index of (periodontitis/ Green tea (mouth rinse users) (study group) first visit=1.149 and decreased in second visit to =0.951 as compared with (periodontitis/ control group) in first visit = 1.612 while in second visit=1.16

TABLE 4: descriptive statistics of gingival index in study group and control group

Visit	Study group		Control group	
	Mean	SD	Mean	SD
First visit	1.149	0.235	1.612	0.308

Second visit	0.951	0.253	1.16	0.182

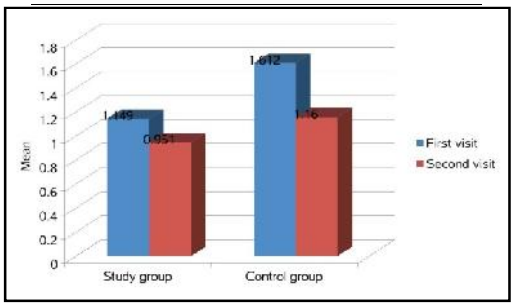

FIGURE 4: the relationship between gingival index in study group and control group patients (first and second visit)

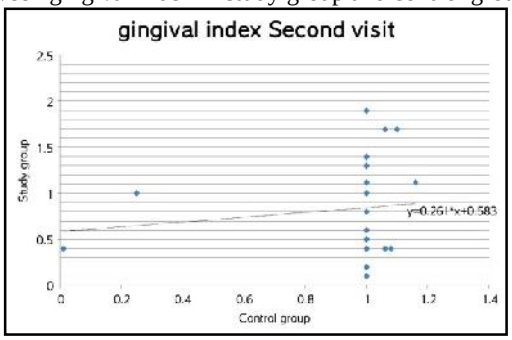

FIGURE 5: The relationship between gingival index in study group and control group periodontitis patients (second visit only)

TABLE 5: inter group comparison of means of gingival index of study group and control group in first and second visit by using t-test

Group	First visit			Second visit		
	t-test	P-value	Sig	t-test	P-value	Sig
Study group & Control group	3.038	0.006	S*	5.486	P<0.01	HS**

*P<0.05 Significant, **P<0.01 High significant

Table 6: t-test between First visit and Second visit of gingival index of study group and control group

Visit	Study group			Control group		
	t-test	P-value	Sig	t-test	P-value	Sig
Between First visit & Second visit	3.402	0.002	S*	8.454	P<0.01	HS**

*P<0.05 Significant, **P<0.01 High significant

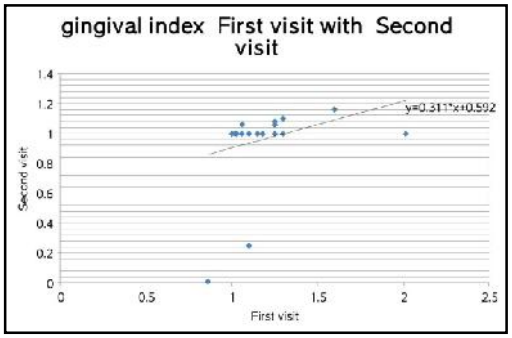

FIGURE 6: the relationship between gingival index in the first visit as compared with the second visit in the study group.

DISCUSSION

As the result shown that the green tea have great effect on the oral cavity which is degrease in the plaque index which mean good oral hygiene condition also decrease in gingival condition which is clear in decrease in gingival index between the control group and test group which is clear in many articles, while other show that green tea have a good effect to decrease oral halitosis. Green tea as mouth wash adjunct with scaling and polishing have good result and without any side effect if it used for long time as chlorhexidyne which have side effect if used for long time- also green tea show decrease in halitosis when fasting and in the morning when take it at night.

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