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1,2).

(Streptococcus)

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가 , Capnophilic bacteria,

가

Black pigmented bacteroides^{3,4)}

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가, ,

가

5).

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6).

*

II. A(Tab/Bru)
1

1. ()* B(Tab)
1 800mg , , 1 3
, , A, A
, L - , , Bass 7)
L - .
()

2. ,
, A, B A, B baseline
5 1
1) B
20 - 30 , 3 baseline
100 2 3 2 , 3
6 Ramfjord (#3, 9, 12,
19, 25, 28)
1 3)
, 5mm 2
, 가 6
1 Ramfjord (#3, 9, 12, 19, 25, 28)
(Gingival Index, L e, H. & Silness, J.,
1963)⁸⁾, (Plaque Index, Silness, J. &
L e, H., 1964)⁹⁾, ¹⁰⁾
, 가
¹¹⁾, Periopaper strip(Proflow Inc.,
NY, USA)
Periotron 8000(Proflow Inc., NY, USA)
2) Periopaper srtip 30
2 , strip 30
baseline 100
30 A, B, 20
A, B
A(Bru) 1
, B(NH)

4) Gracey curette 가 independent
 가 가 sample t - test
 0.2ml paired t - test
 가 vortex 10
 . 23gauge slide ANOVA
 , Olympus BH - 2 SPSS ver 8.0(SPSS Inc., Chicago, USA)
 (Olympus Optical Co., Ltd, Tokyo, Japan) 95%
 400 cocci, non - motile
 rods, motile rods, spirochetes III.

5) 1.

Table 1. Plaque index[‡]

Day	Tab/Bru	Tab	Bru	NH
0	0.77 ± 0.47	0.60 ± 0.44	0.62 ± 0.39	0.65 ± 0.68 [‡]
5	0.76 ± 0.53 [#]	0.64 ± 0.38 [†]	0.91 ± 0.52	1.71 ± 0.72 ^{# † ‡}
14	0.64 ± 0.42 [*]	0.71 ± 0.46	0.94 ± 0.51 [*]	
21	0.58 ± 0.37 [*]	0.80 ± 0.65	0.93 ± 0.58 [*]	

[‡]Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

[‡] P<0.05 as compared with day 0 in each group

^{*}: P<0.05 Tab/Bru vs Bru

[#]: P<0.05 Tab/Bru vs NH

[†]: P<0.05 Tab vs NH

: P<0.05 Bru vs NH

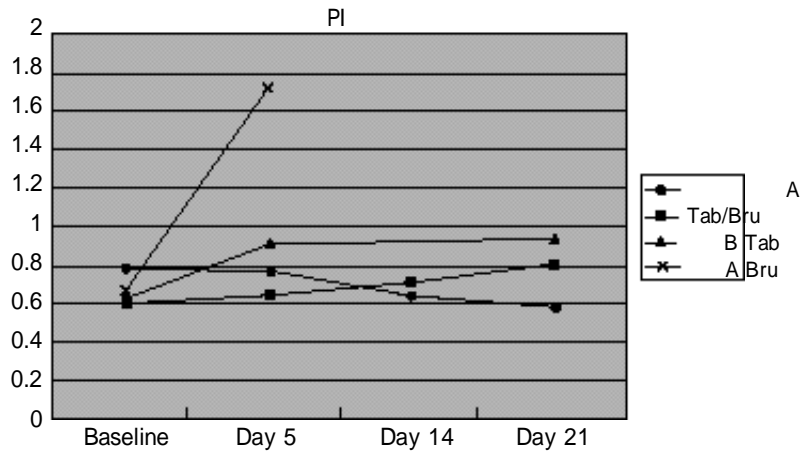


Figure 1. Plaque index

1) (PI) baseline baseline (P<0.05)(Table 1, Figure 1).
 B 가
 , 5
 2) (GI)
 A, B A(0.76, 0.64, 0.91) baseline B 5 (1.39)
 (P<0.05). 14 21 baseline(0.87)
 A(0.64, 0.58) A(0.94, 0.93)가 A, B
 A , A(0.78, 0.91, 0.98)
 B, A 가 , B A (P<0.05).

Table 2. Gingival index[‡]

Day	Tab/Bru	Tab	Bru	NH
0	0.78 ± 0.46	0.73 ± 0.46	0.73 ± 0.29	0.87 ± 0.67 [‡]
5	0.78 ± 0.52 [#]	0.91 ± 0.58 [†]	0.98 ± 0.69	1.39 ± 0.51 ^{#†} [‡]
14	0.79 ± 0.55	0.86 ± 0.58	0.96 ± 0.53	
21	0.79 ± 0.49	0.85 ± 0.59	0.99 ± 0.44	

[‡]Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

[‡] P<0.05 as compared with day 0 in each group

[#]: P<0.05 Tab/Bru vs NH

[†]: P<0.05 Tab vs NH

:P<0.05 Bru vs NH

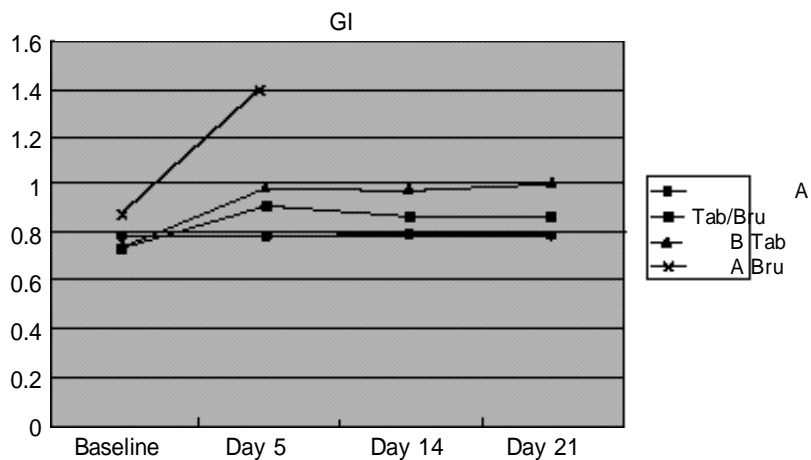


Figure 2. Gingival index

Table 3. Bleeding on probing[‡]

Day	Tab/Bru	Tab	Bru	NH
0	0.59 ± 0.44	0.59 ± 0.37	0.67 ± 0.32	0.72 ± 0.32 [¶]
5	0.53 ± 0.30 [#]	0.57 ± 0.38 [†]	0.66 ± 0.48	1.19 ± 0.32 ^{#† ¶}
14	0.47 ± 0.23	0.54 ± 0.23	0.67 ± 0.27	
21	0.44 ± 0.25 [*]	0.65 ± 0.32	0.71 ± 0.23 [*]	

[¶]Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

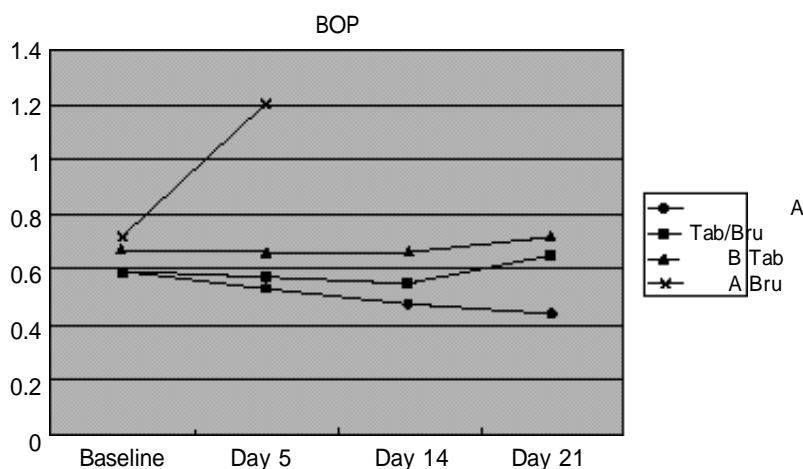
[¶] P<0.05 as compared with day 0 in each group

^{*}: P<0.05 Tab/Bru vs Bru

[#]: P<0.05 Tab/Bru vs NH

[†]: P<0.05 Tab vs NH

:P<0.05 Bru vs NH

Figure 3. Bleeding on probing[¶]Table 4. Probing pocket depth[‡]

Day	Tab/Bru	Tab	Bru	NH
0	0.92 ± 0.62	0.96 ± 0.63	0.97 ± 0.42	1.03 ± 0.50 [¶]
5	0.83 ± 0.72 [#]	0.84 ± 0.52 [†]	0.98 ± 0.62	1.32 ± 0.50 ^{#† ¶}
14	0.75 ± 0.69 [*]	0.85 ± 0.65	1.01 ± 0.56 [*]	
21	0.74 ± 0.55 [*]	0.81 ± 0.66	0.98 ± 0.55 [*]	

[¶]Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

[¶] P<0.05 as compared with day 0 in each group

^{*}: P<0.05 Tab/Bru vs Bru

[#]: P<0.05 Tab/Bru vs NH

[†]: P<0.05 Tab vs NH

:P<0.05 Bru vs NH

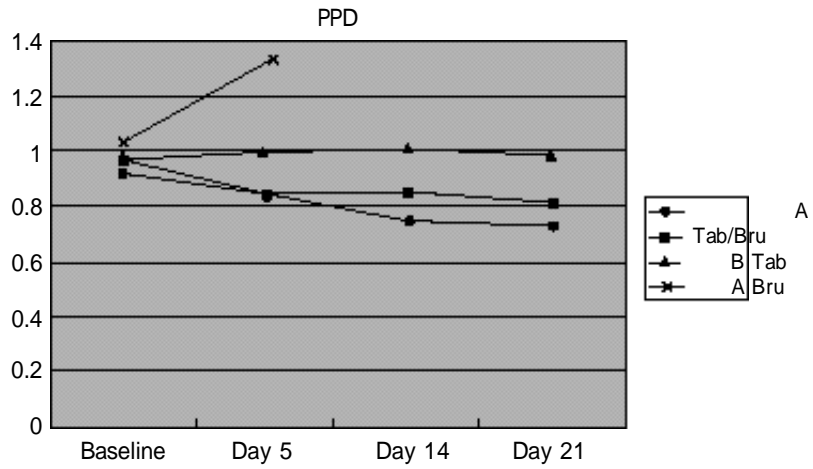


Figure 4. Probing pocket depth

Table 5. Gingival crevicular fluid[‡]

Day	Tab/Bru	Tab	Bru	NH
0	84.07 ± 36.45	78.52 ± 43.80	67.35 ± 39.31 [¶]	79.80 ± 42.22 [¶]
5	92.26 ± 37.28	83.61 ± 38.06	80.00 ± 38.15	102.47 ± 51.34 [¶]
14	87.83 ± 43.26	96.57 ± 40.95	82.15 ± 30.00	
21	84.37 ± 32.51	99.78 ± 30.05	96.80 ± 34.56 [¶]	

[¶]Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

[¶] P<0.05 as compared with day 0 in each group

:P<0.05 Bru vs NH

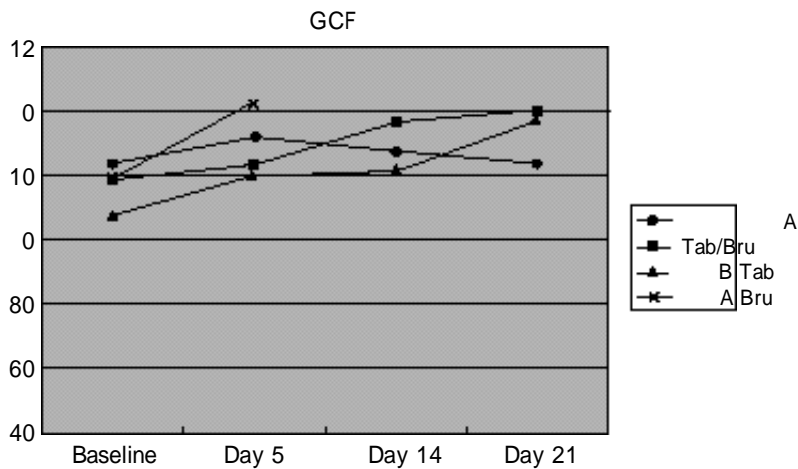


Figure 5. Gingival crevicular fluid

가 A (Table 2, Figure 2).

3) (BOP) B baseline(0.72) A(0.53, 0.57, 0.66) (Table 3, Figure 3).

4) 14 21 A(0.75, 0.74) A(1.01, 0.98)가 (P<0.05) (Table 4, Figure 4).

5) (GCF) A A, B 가 21 (96.80) 5 (102.47) base -

Table 6. Percentage of Cocci†

Day	Tab/Bru	Tab	Bru	NH
0	42.84 ± 17.92†	36.57 ± 15.52	47.57 ± 14.65†	51.70 ± 14.16
5	52.01 ± 16.38	46.26 ± 19.03	45.83 ± 18.47	47.21 ± 13.76
14	57.94 ± 14.88*	54.54 ± 12.77	43.98 ± 20.54*	
21	60.86 ± 21.54*†	57.54 ± 19.01	43.51 ± 15.29*	

†Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

† P<0.05 as compared with day 0 in each group

*: P<0.05 Tab/Bru vs Bru

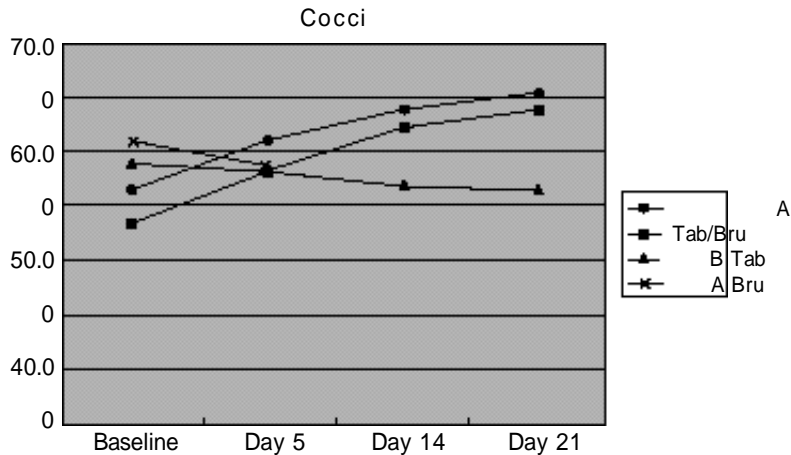


Figure 6. Percentage of cocci

Table 7. Percentage of Non - motile rod[‡]

Day	Tab/Bru	Tab	Bru	NH
0	21.39 ± 10.59	28.19 ± 12.47	21.45 ± 8.21	25.96 ± 13.18
5	22.11 ± 11.24	23.27 ± 11.02	18.22 ± 11.24	30.06 ± 9.22
14	20.89 ± 11.02	23.44 ± 13.38	18.60 ± 9.94	
21	20.46 ± 12.73	22.03 ± 10.91	19.16 ± 12.22	

‡Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

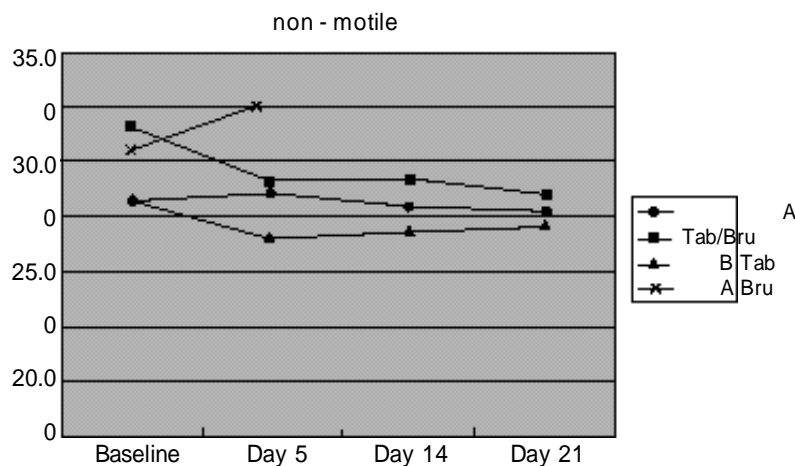


Figure 7. Percentage of non - motile rod

Table 8. Percentage of Motile rod[‡]

Day	Tab/Bru	Tab	Bru	NH
0	25.47 ± 14.07	21.94 ± 10.56	15.07 ± 11.97	11.74 ± 10.83
5	15.89 ± 13.75	12.09 ± 10.21	18.82 ± 11.33	17.82 ± 11.90
14	11.41 ± 8.89* †	10.59 ± 9.44	20.29 ± 14.91*	
21	13.60 ± 10.74* †	11.77 ± 7.63	19.37 ± 15.74*	

‡Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

† P<0.05 as compared with day 0 in each group

*: P<0.05 Tab/Bru vs Bru

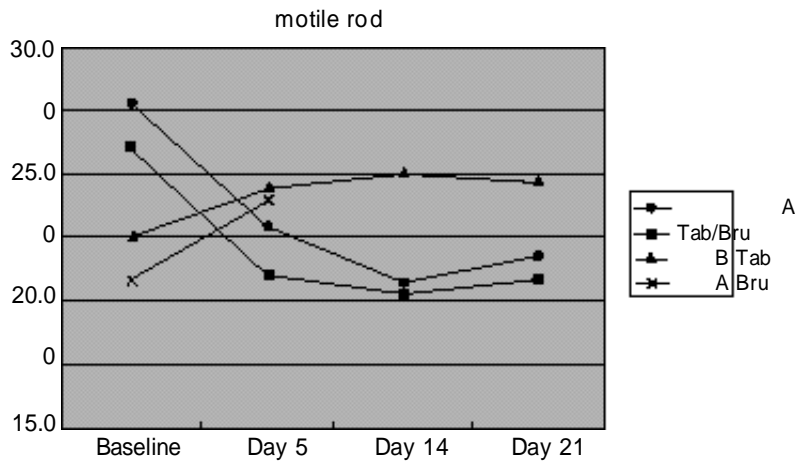


Figure 8. Percentage of motile rod

Table 9. Percentage of Spirochete‡

Day	Tab/Bru	Tab	Bru	NH
0	10.30 ± 9.04 †	9.97 ± 8.96	15.91 ± 10.25	10.60 ± 7.07
5	5.32 ± 4.49	9.35 ± 5.45	14.14 ± 12.96	12.44 ± 10.52
14	5.21 ± 4.40 *	9.88 ± 5.34	15.14 ± 11.13 *	
21	6.42 ± 3.23 * †	8.67 ± 6.63	14.35 ± 11.80 *	

‡Mean S.D.

Tab/Bru : Cleaning tablet and tooth brushing

Tab : Cleaning tablet only

Bru : Tooth brushing only

NH : No hygiene procedure

† P<0.05 as compared with day 0 in each group

*: P<0.05 Tab/Bru vs Bru

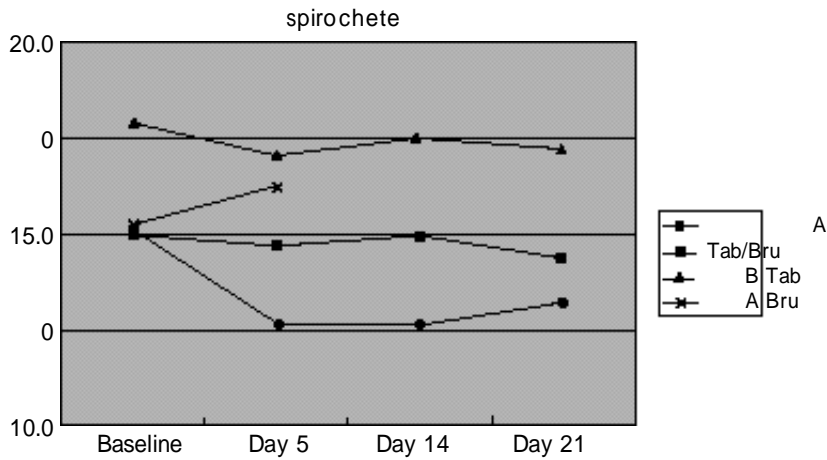


Figure 9. Percentage of spirochete

line(67.35, 79.80)

(P<0.05)(Table 5, Figure 5).

2.

가 14).
가

(, , ,)

3.

가 24 - 48
15,16).

cocci, non -
motile rod, motile rod, spirochete

가 2 , 40%
17).

Cocci

A, B 가

18,19,20).

21 (60.86, 57.54)

Minnesota

baseline(42.84, 36.57)

57% 가

2

14 21

1

21).

30%
가

A

A

(P<0.05)(Table 6, Figure 6).

가

Non - motile rod

(Table 7, Figure 7), motile rod

()

(Table 8, Figure 8).

가

Spirochete

A

14 (5.21) 21

(6.42)

A(15.14, 14.35)

, 21

baseline(10.30)

(P<0.05).

가

가

IV.

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12).

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13).

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 15
 cocci 24.4% 가
 motile rod spirochete
 () 3.6%, 12.4%
 가 ()
 Hawthorne effect)
 가 가 가
 3 ()

V.

1960

22,23),
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 Periotron
 8000(Proflow Inc., NY, USA)
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 24), 가 25)
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 3
 가
 baseline cocci 14-21
 rod , spirochete 가, motile
 1
 McNabb 26)

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- Abstract -

Effect of Chewable tablet containing Sodium Fluoride on Gingival inflammation and Plaque Accumulation

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The objective of this study was to evaluate the effect a chewable tablet containing sodium fluoride and lauroyl sodium sulfate on removing plaque and inhibiting gingival inflammation. A randomized parallel study was designed. 100 volunteers participated in the study. There were two test groups each with 30 subjects. Test group A was instructed to brush once in the morning, and to use the tablet once in the afternoon and once in the evening. Test group B was instructed to use the tablet three times a day without brushing. There were two control groups each with 20 subjects. Control group A was instructed to brush once in the morning only. Control group B was instructed not to brush at all. Two weeks before the test period, the subjects received thorough tooth cleaning and polishing. At baseline, GI, PI, BOP, and GCF of the Ramfjord teeth were measured in all groups. Bacteria culture was done with the plaque sampled from tooth with the deepest

pocket. After 5 days, clinical indices were measured and the bacterial culture was repeated. Control group B was dropped from the study after this period. All the other groups remained and the indices and the culture was repeated after 2 weeks, and 3 weeks. Also whether the oral mucosa showed signs of irritation was monitored throughout the test period. Test group A showed less PI, GI, BOP, probing depth, GCF than test group B or control group A. Especially, PI and the BOP was significantly less than that of the group that was instructed to brush once a day. This implies that the added use of this tablet aids in plaque removal in people who brush just once a day. Test group A showed increase of cocci, decrease of motile rods, and decrease of spirochetes after 14 - 21 days. And this was significantly different from the control group A. At no time of the test period did any of the subjects show signs of irritation of the oral mucosa or adverse reactions. Following conclusions could be obtained from this study. This chewable tablet for enhanced oral hygiene could be used as an adjunct to oral hygiene in people who do not brush adequately. The use of this tablet decreased the number of sub-gingival bacteria, and this could be effective in plaque removal and for prevention of gingival inflammation.

key words : gingivitis, periodontitis, dental
plaque, sodium flouride, oral hygiene