

I. ,<sup>12)</sup> - D  
 가 , , 가  
 . (marker)  
 . 가 가 <sup>13,14)</sup>  
 1,2) , ,  
 Slots(1988) <sup>3)</sup> , , elastase  
 , 가가  
 . 15,16),  
 , 17)  
 .  
 1960 Maiman<sup>18)</sup>  
 1961 Javan <sup>19)</sup> He - Ne  
 가  
 , 1964  
 ,  
 가 4-7). Patel <sup>20)</sup> CO<sub>2</sub> ,  
 Geusic <sup>21)</sup> Nd :  
 YAG(Neodymium : Yttrium Aluminum -  
 Garnet) 가 .  
 , CO<sub>2</sub> , Nd :  
 8), YAG ,  
 - 9-11), Erbium : YAG , Holmium : YAG

, Excimer 가  
 1960 가  
 ) 0.488 $\mu$ m( )  
 가  
 가 ,  
 , 가가  
 , , ,  
 ,  
 ,  
 가

Table 1. Experimental design

Group	1	2	3	4
Tooth No. #13, #15#23, #25#33, #35 #43, #45				

I: No Treatment  
 II: Argon Laser  
 III: Root planing  
 IV: Root planing + Argon Laser

2.

(1)

2 ( 1 가 )

4

8

Group 1 :

Group 2 :

Group 3 :

Group 4 :

(2)

(Dental 200, hgm, 3959  
 west 1820, south salt lake city, Utah 84104,  
 USA) 0.6W, 0.1  
 Pulse(Pulse 0.2 ) (514.5  
 mm) 300 $\mu$ m

fiber optic

가 6

6

16

128

(3)

Periocheck (Pro - Dent, Batesville, Arkansas 72503, USA)

15

43

(Gel slide pocket, collection strip pocket. positive control strip)

Foil

5

strip

가

strip

strip

20 - 30

strip

strip

strip 가

. strip

(43 )

. 12

1

0, 1, 2

(4) 가

, M hlemann Son(1971)

0 - 5

0

1

2

3

4

5

Michigan - O - probe

20 - 40g

가 가

7

(5)

SPSS V 8.0 for

win(SPSS Inc., USA)

Periocheck test

Kruskal - Wallis' test

Mann - Whitney's test

Wilcoxon Signed Ranks test

Mann - Whitney's test

, Periocheck test

### III.

#### 1. Periocheck Test

가

Table 2. Comparison of Periocheck Test score

	preop.	postop. day3	postop. day7
Chi - Square	7.239	19.901	37.035
df	3	3	3
Asymp. Sig	.065	.000	.000

Kruskal - Wallis ' Test(\*: P<0.05)

Table 3. Comparison of Periocheck score to 3day after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.235	.000*	.112
Argon laser			.005*	.852
scaling				.004*
scaling+laser				

Mann - Whitney ' s Test(\*: P<0.05)

Table 4. Comparison of Periocheck score to 7day after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.132	.000*	.003*
Argon laser			.000*	.102
scaling				.002*
scaling+laser				

Mann - Whitney 's Test (\*: P<0.05)

Table 5. Comparison of Periocheck score for each day about experiment group

	No Tx	Argon laser	scaling	scaling+laser
Postop 3day - preop	.414	.414	.002*	.058
Postop 7day - preop	.102	.096	.000*	.001*
Postop 7day preop 3day	.414	.257	.003*	.013*

Wilcoxon Signed Ranks Test (\*:P<0.05)

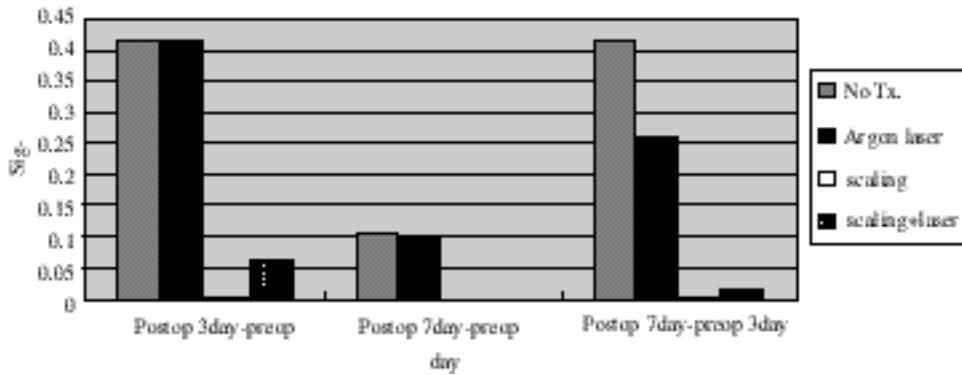


Figure 1. Comparison of Periocheck score for each day about experiment group

, 3 7 (P < (P<0.05).  
 0.05).(Table 2)  
 Mann - Whitney's Test 7  
 (Table 3 4),  
 (P<0.05),  
 , 3 7 3  
 , 3 7  
 (P<0.05).

Table 6. Comparison of anterior tooth score to 3day after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.397	.001*	.293
Argon laser			.052	.889
scaling				.013*
scaling+laser				

Mann - Whitney 's Test(\*: P<0.05)

Table 7. Comparison of anterior tooth score to 7day after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.151	.000*	.007*
Argon laser			.002*	.151
scaling				.067
scaling+laser				

Mann - Whitney 's Test(\*: P<0.05)

Table 8. Comparison of posterior tooth score to 3day after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.338	.004*	.229
Argon laser			.045*	.771
scaling				.098
scaling+laser				

Mann - Whitney 's Test(\*: P<0.05)

Table 9. Comparison of posterior tooth score to 7day after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.370	.000*	.088
Argon laser			.001*	.356
scaling				.013*
scaling+laser				

Mann - Whitney 's Test(\*: P<0.05)

( Table 5),

(P < 0.05),

3 , 7 (P < 0.05).  
 3 7 (P < 0.05).

(Table 6, 7, 8, 9)

Table 10. Comparison of SBI score

	preop	postop
Chi - Square	1.700	13.662
df	3	3
Asymp. Sig.	.637	.003

(P < 0.05). 7

Kruskal - Wallis ' Test(\*:P<0.05)

Table 11. Comparison of SBI score to one week after experiment

	No Tx.	Argon laser	scaling	scaling+laser
No Tx.		.355	.002*	.006*
Argon laser			.023*	.063
scaling				.645
scaling+laser				

Mann - Whitney 's Test(\*: P<0.05)

Table 12. Comparison of SBI score for one week after experiment group

	No Tx.	Argon laser	scaling	scaling+laser
postop - Preop.153	.026	.003	.000	

Table 13. Comparison of probing pocket depth

	Preop(mean ± SD)	Postop (mean ± SD)
No. Tx	3.41 ± 1.21	3.50 ± 1.11
Argon laser	3.28 ± 1.22	3.25 ± 1.32

Table 14. Correlation between Periocheck test score and SBI score

		Periocheck	SBI
Periocheck	person correlation	1.000	- 0.98
	Sig.(2 - tailed)	.	.269
	N	128	128
SBI	person correlation	- 0.98	1.000
	Sig.(2 - tailed)	.269	
	N	128	128

(Table 14).

(P < 0.05),

7

IV.

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(P <

0.05).

2.

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7

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(P <

0.05). (Table 10)

Mann - Whitney's Test

(Table 11),

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가

(P < 0.05),

(P < 0.05).

, Nd : YAG ,

CO<sub>2</sub>

(P <

<sup>23-31</sup>), acidulated phosphate

0.05).(Table 12)

fluoride

<sup>32-35</sup>)

3.

3.30 ±

<sup>36-37</sup>)

Nd :

1.04 ,

7

3.19 ±

YAG

<sup>38</sup>)

1.03 (Table 13).

, Nd : YAG

가

<sup>39</sup>), Erbium :

4. Periocheck Test

SBI

YAG

<sup>40</sup>)

Nd : YAG

<sup>41-42</sup>)

Periocheck Test

SBI

Morlock (1992)<sup>43)</sup> 가 , , ,  
 , Lin (1992)<sup>44)</sup> Nd : YAG 1982 Etienne  
 가 52) Nd :  
 YAG  
 , Spencer (1992)<sup>45)</sup> 가 , Nd : YAG  
 / 7  
 1984 T.M. Gillis 53)  
 , Cobb (1992)<sup>46)</sup> Nd : YAG ,  
 3.0W 3 , 가  
 , Tewfik (1994)<sup>47)</sup> Nd : YAG , 7 ,  
 가 21 가  
 가 , 가 30% 가  
 , Ito (1993)<sup>48)</sup>, (1993)<sup>49)</sup> . 1988 Kepchock<sup>54)</sup>  
 Nd : YAG CO<sub>2</sub> CO<sub>2</sub>  
 Pick (1995)<sup>50)</sup>, Harris (1989)<sup>51)</sup> 55) , 1993 Vrabec  
 , 가 , 가  
 , 가 , Kass 56)  
 . 3 (7, 14, 21, 90 )  
 가  
 가  
 :: 가  
 , , , , Brill<sup>57)</sup>  
 , filter paper strip 3



(P < 0.05),

, Wistamin

가 strip deep blue stain

3

. Loe and Holm - pedersen<sup>58)</sup>

7

3 7

가 ,

가

(P < 0.05). Pecaro<sup>62)</sup>

. Brill

McCullom<sup>63)</sup>

Bronnestam<sup>59)</sup>

가

가 1/10 ,

가

가

Alfano<sup>60)</sup>

Egelberg<sup>61)</sup>

filter paper

Myer

strip

가

38)

가

가

Morlock <sup>43)</sup>

가

가

Periocheck test

, 3 7

(P<0.05).

(P < 0.05),

3

(P<0.05),

Listgarten <sup>64)</sup>

(P < 0.05).

8

7

가

(P<0.05).

Listgarten <sup>64)</sup>

가

가 . ,  
Periocheck test

V.

16 , 128

가 가 .

Periocheck

test

1. Periocheck test  
3 7

(P<0.05).

7

(P<0.05), 3

(P<0.05).

Periocheck test

(P<0.05),

3 7

(P<0.05).

- 2.

(P<0.05),

(P<0.05).

3.

가

가 가

## VI.

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  49. , , : Nd : YAG laser 가

Figure 2



Figure 3

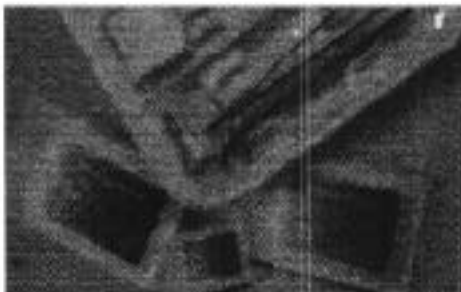


Figure 4

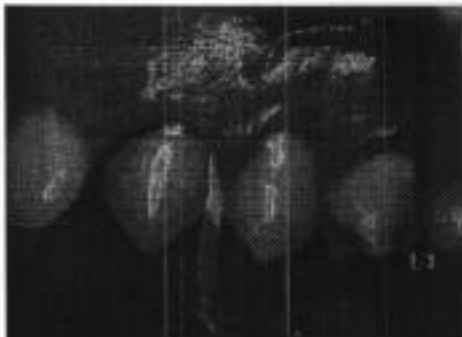
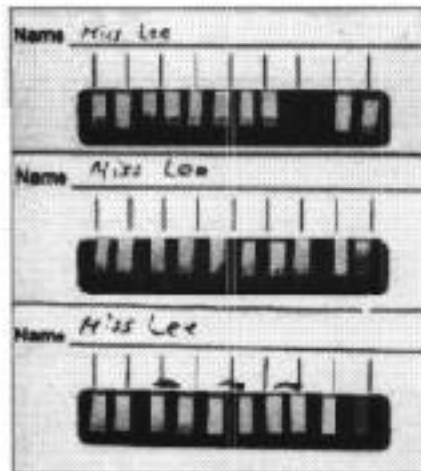


Figure 5



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- Abstract -

Figure 2.

Figure 3. Periocheck test . gel  
packet, collection strip packet,  
positive control strip

Figure 4. collection strip  
1 - 2mm

Figure 5.

## Detection of Collagenase in Inflammatory Gingiva using Root planning and Argon Laser

Chang - Gon Lee, Sung - Bin Lim, Chin -  
Hyung Chung  
Department of Periodontology College of  
Dentistry Dan - Kook University

The major cause of periodontal disease is microorganism in the dental plaque.

Gingival sulcular fluid, which is exudate released from the tissue near crevicular epithelium is related with inflammation.

The purpose of this study was to evaluate the argon laser efficiency between the clinical index and onset of collagenase of gingival sulcular fluid.

Material divided 16 patients into 4 groups. The first control was without treatment. The second was with just treatment of argon laser, The third was treated by scaling and root planning and the fourth was treated with both scaling and root planning and argon laser.

The level of periocheck test, the index of bleeding, and the depth of periodontal pocket were evaluated from for 128 teeth of 64 anterior teeth and 64 posterior teeth.

The results were as follows ;

1. In the score of periocheck test, root planing group(group 3) was sig -

nificantly reduced more than the group without treatment (group 1) and the argon laser treatment (group 2) for results of 3 days and 7 days. But root planing plus argon laser treatment (group 4) in the 7 days after experiment, was significantly reduced than no treatment (group 1) and root planing treatment (group 3) ( $P < 0.05$ ), in the 3 days after experiment, was significantly reduced than root planing (group 3) ( $P < 0.05$ ). The score of periocheck test to the root planning group (group 3) were significantly reduced between days 1, day 3 and day 7 ( $P < 0.05$ ). Root planning plus argon laser group (group 4) were significantly reduced to 1 or 7 days and 3 or 7 days ( $P < 0.05$ ). The argon laser group (group 2) didn't show any changes.

2. In the case of sulcus bleeding index, the root planning group (group 3) and root planning plus argon laser group (group 4) were reduced more than without treatment group (group 1) ( $P < 0.05$ ) and sulcus bleeding index in the root planning group (group 3) were reduced more than the argon laser group (group 2) ( $P < 0.05$ ).
3. There wasn't any changes of pocket depth between the control and the experiment group as with experiment periods also.