CHAPTER IV

RESULT

The results of this study would be presented as follows :

A. The fluoride concentration in each group of sample by means ($\bar{X}$), standard deviations (SD), and ranges (Minimum-Maximum)

B. The comparison of mean fluoride concentration in each group by analysis of variance and multiple comparison

C. The shear bond strength in each group of sample by means ($\bar{X}$), standard deviations (SD), and ranges (Minimum-Maximum)

D. The comparison of mean shear bond strength in each group by analysis of variance and the multiple comparison

E. The correlations between the fluoride concentration and the shear bond strength

A. The fluoride concentration in each group of sample by means ($\bar{X}$), standard deviations (SD) and ranges (minimum-maximum)

The fluoride concentrations of each group of samples were presented in Appendix. Means, standard deviations and ranges of the fluoride concentration were presented in Table 3. Fluoride concentrations were presented in part per million (ppm) after multiply the means of fluoride concentration by 20,000 because the diluting effect of the washeding solution during the fluoride concentration determination.

Table 3 Means, standard deviations and ranges of fluoride concentration in group 1 (non-fluorosis teeth), group 2 (very mild to mild fluorosis teeth) and group 3 (moderate to severe fluorosis teeth)

Group		Fluoride concentration (part per million, ppm)		
		$\bar{X}$	SD	Min.-Max.
Group 1	Upper	282.18	69.51	209.00 - 460.00
	Lower	291.54	24.09	240.00 - 320.00
	Total	286.23	54.11	209.00 – 460.00
Group 2	Upper	290.00	37.91	240.00 - 360.00
	Lower	330.77	75.22	250.00 - 530.00
	Total	307.67	59.64	240.00 – 530.00
Group 3	Upper	395.88	97.98	300.00 - 570.00
	Lower	460.77	76.21	320.00 - 590.00
	Total	424.00	93.65	300.00 – 590.00

From Table 3, the data of fluoride concentration showed that the mean fluoride concentration was greater in the higer degree of fluorosis teeth. The lower teeth showed slightly more fluoride concentration when compare with upper teeth. The wide range of fluoride concentration represented the

irregularities and distribution of fluorosis area of enamel surface. Relative high fluoride concentration were found in the moderate to severe fluorosis teeth (group 3, sample No 3, 4, 13, 14, 18, 22, 30, see Appendix). The less degree fluorosis teeth (group 1 and 2) showed relative lower fluoride concentration when compared with group 3.

B. The comparison of mean fluoride concentration in each group by analysis of variance and multiple comparison

The One-way analysis of variance (ANOVA) and Duncan's multiple comparison test were used to determinate the statistical difference of mean fluoride concentration between groups and among the three groups by SPSS for windows Release 7.5 (Table 4). Both analyses were significant at $p< 0.01$.

Table 4 Analysis of Variance (ANOVA) results of the means fluoride concentration

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	329724.877	2	164862.43	32.423**	0.000
Within group	442376.03	87	5084.782		
Total	772100.90	89			

** $p< 0.01$

Table 5 Statistical comparison of mean fluoride concentration using Duncan's multiple range test

Mean Fluoride concentration	Group 1 $\bar{X}$ = 286.23	Group 2 $\bar{X}$ = 307.67	Group 3 $\bar{X}$ = 424.00
Group 1	-		
Group 2	21.4333	-	
Group 3	137.7667 **	116.3333 **	-

** $p < 0.01$

Table 4 showed a significant difference in fluoride concentration among the three groups at $p < 0.01$. Table 5 represented the significant difference between group 1 and 3 and also in group 2 and 3. The group 3 had significantly greater fluoride concentration than the other groups, but no statistical difference between group 1 and group 2.

C. The shear bond strength in each group of sample by means ($\bar{X}$), standard deviations (SD), and ranges (Minimum-Maximum)

Table 6 Means, standard deviations and ranges of shear bond strength in group 1 (non-fluorosis teeth), group 2 (very mild to mild fluorosis teeth) and group 3 (moderate to severe fluorosis teeth)

Group		Shear bond strength (N/mm^2)		
		$\bar{X}$	SD	Min. – Max.
Group 1	Upper	11.83	2.45	8.00 - 17.27
	Lower	10.57	2.50	7.91 - 17.01
	Total	**11.28**	**2.51**	**7.91 – 17.27**
Group 2	Upper	10.02	2.92	6.60 - 15.78
	Lower	11.15	2.78	6.26 - 16.60
	Total	**10.51**	**2.87**	**6.26 – 16.60**
Group 3	Upper	8.12	3.59	2.06 - 15.41
	Lower	7.65	3.61	2.16 - 13.86
	Total	**7.92**	**3.55**	**2.06 – 15.41**

The data of shear bond strength showed slight difference in shear bond strength between group 1 and 2 (11.28 and 10.51 N/mm^2). When compared with group 3 (7.92 N/mm^2) the great difference was seen. The standard deviation and range of group 3 were greater than those of group 1 and 2.

D. The comparison of mean shear bond strength in each group by analysis of variance and multiple comparison

The One-way analysis of variance (ANOVA) and Duncan's multiple comparison test were used to determine the statistical difference of mean shear bond strength between groups and among the three groups by SPSS for windows Release 7.5 (Table 7). Both analyses test was significant at $p < 0.01$.

Table 7 Analysis of Variance (ANOVA) results of the mean shear bond strength

Source of variation	Sum of Squares	df	Mean Square	F	Sig.
Between group	186.699	2	93.350	10.323**	.000
Within group	786.767	87	9.043		
Total	973.466	89			

** $p < 0.01$

Table 8 Statistical comparison of mean shear bond strength using Duncan's multiple range test

Mean shear bond strength	Group 1 $\bar{X}$ = 11.28	Group 2 $\bar{X}$ = 10.51	Group 3 $\bar{X}$ = 7.92
Group 1	-		
Group 2	0.7721	-	
Group 3	3.3673 **	2.5952 **	-

** $p < 0.01$

Table 7 showed a significant difference in shear bond strength among the three groups at $p < 0.01$. Table 8 represented the significant differences between group 1 and 3 and also in group 2 and 3, but no statistical difference

between group 1 and group 2. Group 3 had significantly lower shear bond strength than the other groups.

E. The correlations between the fluoride concentration and the shear bond strength

Total of 60 samples of fluorosis teeth in group 2 and 3 were assemble to one group. Linear correlations (Pearson's product moment) was used to calculate the correlations between the fluoride concentration and the shear bond strength.

The linear correlations showed negatively significant correlations ($r = -0.408$, $p < 0.001$) between the fluoride concentrations and the shear bond strengths. Scatter diagram in Figure 33 showed tendency of shear bond strength of fluorosis teeth. It showed that high fluoride concentration samples exhibited lower shear bond strength when compared with low fluoride concentration samples.

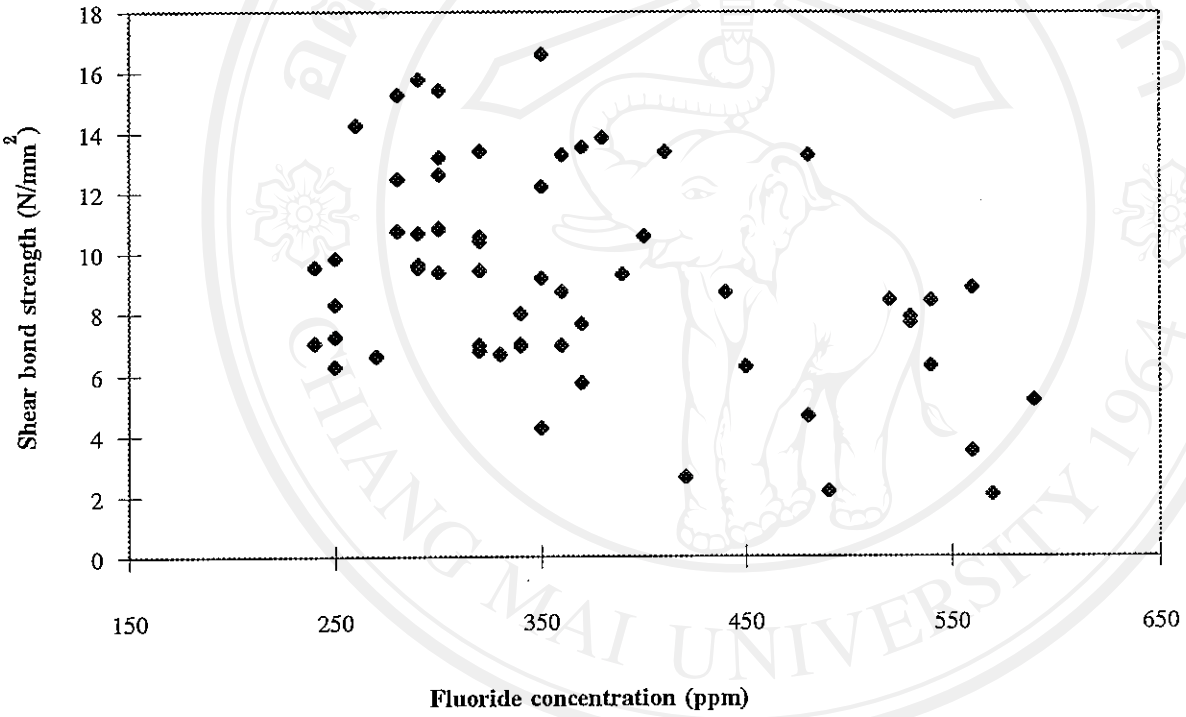

Figure 33 Scatter diagram between fluoride concentrations and shear bond strengths of fluorosis teeth in group 2 and 3