APPENDIX 1

List of material used in the study

Chloramines T, BDH, Laboratory Supplies,England

Distilled water

3M Filtek ™ Z250Universal Restorative Paste (Shade A3) St.Paul, U.S.A

Scotchbond ™ Etching Gel (3M, St.Paul, U.S.A)

Adper ™ Single Bond 2 (3M, St.Paul, U.S.A)

Cellulose mylar strip

1 M Citric acid (210g/L)

I M Sodium Hydroxide (40g/L)

Buffer solution pH 2, 4, 7 & 10

Epoxy resin (Mirapox 950-230)

Methylene blue dye, (R & M Chemical Marketing, UK)

APPENDIX II

List of equipments/instrument used in the study

Ultrasonic scaler (Peizon® Master 400, Switzerland)

Slow speed hand piece,

High speed hand piece

High speed and slow speed diamond bur

Hand instrument-probe 9, plastic instrument no. 1

Light cure machine (Starlight Pro, Mectron, Italy)

Curing Radiometer (model 100 P/N 10503, Demetron, KERR, USA)

Soft lex discs (3M, St.Paul, U.S.A)

Neslab Thermocycler (Neslab Instruments Inc., USA 002013)

Microprocessor pH meter (Hanna Inst.)

Plastic Cuvettes (Dispolab Kartell)

Low speed saw (Buehcer, 11-1180 Isomet ^{TM})

Image Analyzer (Leica Qwin, Leica Imaging Systems Ltd. Cambridge, England)

APPENDIX III

Table showing the microleakage score at occlusal & cervical margins of each specimen

Sample	pH	Occlusal score	Cervical score
1	**Group A =2.5**	3	3
2	2.5	3	3
3	2.5	3	3
4	2.5	3	3
5	2.5	3	3
6	2.5	2	2
7	2.5	2	2
8	2.5	0	1
9	2.5	3	3
10	2.5	0	0
1	**Group B=3.5**	0	0
2	3.5	3	3
3	3.5	0	0
4	3.5	0	2
5	3.5	0	0
6	3.5	1	1
7	3.5	3	3
8	3.5	3	3
9	3.5	0	0
10	3.5	3	3
1	**Group C=4.5**	3	3
2	4.5	0	0
3	4.5	0	0
4	4.5	3	3
5	4.5	0	0
6	4.5	3	3
7	4.5	2	0
8	4.5	0	1
9	4.5	3	3
10	4.5	3	3
1	**Group D=5.5**	3	3
2	5.5	3	3
3	5.5	0	0
4	5.5	3	3
5	5.5	0	0
6	5.5	0	0
7	5.5	0	0
8	5.5	3	3
9	5.5	3	3
10	5.5	0	3

Table showing the microleakage score at occlusal & cervical margins of each specimen-continue

Sample	pH	Occlusal score	Cervical score
1	**Group E (Controlled)=7**	3	3
2	7	3	3
3	7	3	3
4	7	3	3
5	7	3	3
6	7	2	2
7	7	2	2
8	7	0	0
9	7	1	1
10	7	0	1
1	**Group F=8.5**	3	3
2	8.5	3	2
3	8.5	0	0
4	8.5	2	1
5	8.5	0	2
6	8.5	3	3
7	8.5	1	0
8	8.5	0	1
9	8.5	0	0
10	8.5	0	1
1	**Group G=11.5**	0	2
2	11.5	0	1
3	11.5	0	2
4	11.5	0	1
5	11.5	3	2
6	11.5	3	3
7	11.5	3	3
8	11.5	2	2
9	11.5	0	0
10	11.5	3	3

APPENDIX IV:

POSTER PRESENTATION AT SIXTH SCIENTIFIC MEETING OF IADR MALAYSIA SECTIONED AND EIGHT GENERAL MEETING (10.03.2007 AT FACULTY OF DENTISTRY, SCIENCE & TECHNOLOGY COMPLEX, UNIVERSITI TEKNOLOGI MARA,SHAH ALAM, SELANGOR,MALAYSIA).

ABSTRACT NO: P-8, PAGE 8

Effects of Different pH on Microleakage of Class V Composite Restoration: An *in vitro* Study

Z. Aziz, N.A. Yahya
University of Malaya, Kuala Lumpur, Malaysia

INTRODUCTION

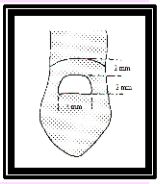
- Composite are widely used for anterior and posterior restoration.
- The longevity in a patient is influences by variety of factors including occlusal forces, parafunctional habits, diet, saliva and plaque composition (Sarret,Coletti & Peluso,2000).
- Microleakage is one of the factors that can reduce the longevity.

OBJECTIVES

- To evaluate and compare the effect of acidic, neutral and alkaline pH on the microleakage of the composite restorations.
- To study the pattern of microleakage at the occlusal and cervical margins of Class V composite restorations.

MATERIALS & METHODS

Collection of human premolar



Preparation of Class V cavity

3M Filtek™ Z 250 Universal Restorative Paste

Thermocycling process

Group A :pH 2.5 Group B :pH 3.5
Group C :pH 4.5 Group D :pH 5.5
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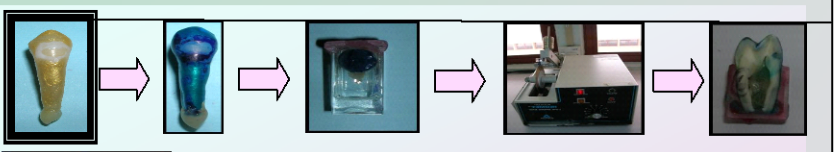
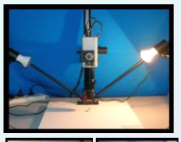
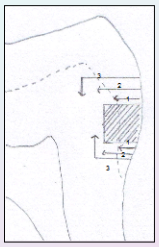
Group F :pH 8.5
Group G :pH 11.5

Immersion 10 minutes in pH medium







Score 0	No dye penetration
Score 1	Dye penetration into enamel
Score 2	Dye penetration into the dentine, not including the axial wall
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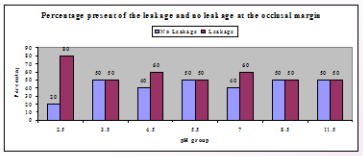
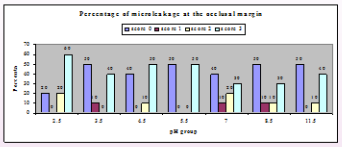
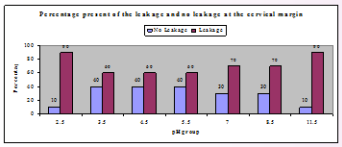
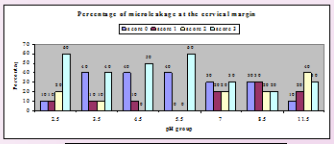
RESULTS

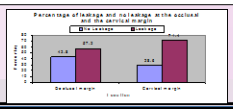
- Microleakage was present in all groups. At the occlusal margin, score 3 was seen highest only in Group A (pH 2.5) which were 60%, where as at the cervical margin, group A (pH 2.5) and group D (pH 5.5) showed highest reading with 60% microleakage. Statistical analysis using Chi-Square test showed no significant difference ($p>0.05$) in microleakage at occlusal or cervical margin between the pH groups.











- More leakage was seen at the cervical area than the occlusal margin even though both margins were on enamel.

DISCUSSION

In this study, pH 2.5 showed highest leakage at occlusal & cervical margin. Tahir et al (2005) found reduction in microhardness of composite after immersion in pH 3 solution for a week. Ortengren et al(2001) observed greatest composite solubility in pH 4 (compared to pH 6 & 8) up to a week.

Different enamel thickness at occlusal and gingival explained the occurrences of more leakage at the cervical margin.

CONCLUSION

- Within the limitation of this study, it can be concluded that no significant effect of difference pH occlusal or cervical microleakage in a Class V composite restoration.
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REFERENCES

Ortengen,U.,Andersson, F. Elgh,U.,Terselius,B.& Karlson,S. (2001).Influences of pH and storage time on the sorption and solubility behaviour of three composite resin materials.*J.Dent.* 29 :35-41
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This study was supported by University of Malaya Vote F 0109/2005C

APPENDIX V:

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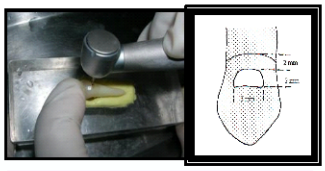

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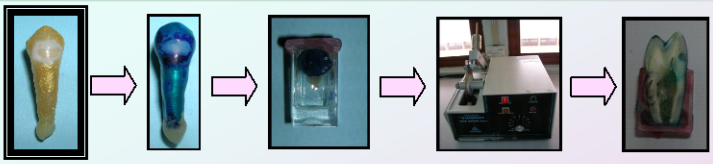

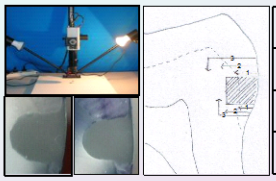

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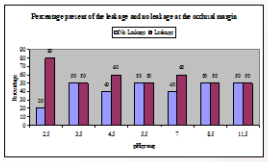

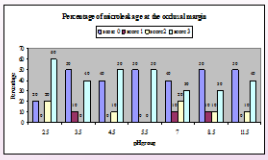

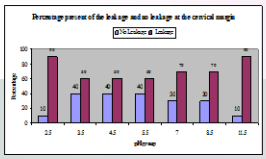

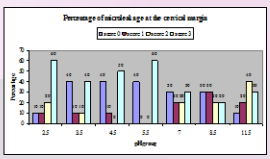

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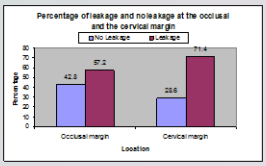

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