

## APPENDIX 1

### LIST OF MATERIALS USED IN THE STUDY

<b>MATERIAL</b>	<b>MANUFACTURER</b>
TPH Spectrum	Dentsply/Caulk, USA
Filtek Z350	3M ESPE, USA
Ceram•X Mono	Dentsply/Caulk, USA
Ceram•X Duo	Dentsply/Caulk, USA
Listerine	Warner-Lamber Co. Morris Plains. NJ, USA
Oral B	Oral B Laboratories, Belmont, Ca, USA
Plant extract mouthrinses	Oral Biology Dept, Dental Faculty, University of Malaya
Distilled water	Research Lab, Dental Faculty, University of Malaya
Ruwa matrix strip	Kemdent, USA
Sof-Lex finishing and polishing disc system	3M ESPE, USA

## APPENDIX II

### LIST OF EQUIPMENT / INSTRUMENT USED IN THIS STUDY

<b>EQUIPMENT/INSTRUMENT</b>	<b>DESCRIPTION</b>	<b>MANUFACTURER</b>
Biosonic	Ultrasonic cleaning system	Whalddedent, USA
Shidmadzu	Vickers microhardness Tester	Shimadzu Corp, Kyoto, Japan
Memmert	Incubator	Germany
Micromotor NM-4000	Low speed handpiece	Switzerland
Spectrum <sup>TM</sup> 800	Light cure unit	Dentsply/Caulk,USA
Universal-Scanning Probe Microscope (SPM) <sup>TM</sup>	Atomic Force Microscopy AFM	Universal Ambios Technology.

### APPENDIX III

#### MEAN VHN AND STANDARD DEVIATION OF COMPOSITES

#### FOR CONTROL GROUP

Data selected (shaded) after randomization using the SPSS version 13.0

#### Initial Mean VHN and standard deviation of TPH Spectrum

Group Sample	1	2	3	4	5	6
1	76.9	79.7	78.3	73.1	70.2	78.0
2	75.0	84.0	73.1	73.7	68.1	71.0
3	74.9	69.6	66.8	75.5	71.7	66.6
4	68.4	79.4	75.5	78.7	71.0	70.4
5	69.5	65.4	68.7	72.5	76.1	69.6
6	77.9	67.2	77.6	69.7	73.1	67.4
7	68.5	71.5	80.0	70.3	66.7	70.3
8	74.3	78.6	72.9	68.4	74.9	70.2
9	71.9	78.9	82.3	73.3	73.2	71.2
10	74.8	67.7	73.3	76.8	71.8	77.8
Mean	73.2	74.2	74.9	73.2	71.7	71.3
SD	3.44	6.56	4.87	3.21	2.88	3.81

#### Initial Mean VHN and standard deviation of Filtek Z350

Group Sample	1	2	3	4	5	6
1	94.5	93.2	97.0	89.3	89.6	88.0
2	112.2	94.8	87.0	93.3	92.5	91.4
3	97.4	98.5	95.6	95.0	93.3	85.5
4	93.1	92.9	89.0	95.2	90.3	90.6
5	92.4	93.7	97.6	92.9	87.0	94.6
6	94.6	91.5	96.9	92.1	87.1	86.7
7	97.2	91.5	99.3	95.4	94.6	93.7
8	89.7	94.4	86.1	94.8	90.7	88.5
9	93.5	97.8	89.2	93.1	93.8	90.9
10	92.0	79.7	89.9	91.7	92.5	91.7
Mean	95.7	92.8	92.8	93.3	91.1	90.1
SD	6.26	5.16	4.97	1.93	2.67	2.94

**Initial Mean VHN and standard deviation of Ceram•X Mono**

Group Sample	1	2	3	4	5	6
1	73.5	89.3	95.6	72.6	77.5	66.6
2	80.3	71.6	89.5	70.7	79.3	72.2
3	78.8	97.4	83.5	76.8	74.9	74.5
4	78.8	91.1	74.3	73.5	80.5	85.9
5	82.3	73.8	90.8	74.5	74.9	74.0
6	84.7	75.3	78.3	77.4	79.4	81.0
7	84.9	78.5	77.5	80.0	83.2	70.5
8	94.1	75.7	78.1	77.6	73.2	70.3
9	79.7	79.6	83.1	77.1	75.0	76.6
10	79.6	85.9	104.0	80.7	68.3	79.0
Mean	81.7	81.8	85.4	76.1	76.6	75.1
SD	5.45	8.60	9.42	3.21	4.26	5.73

**Initial Mean VHN and standard deviation of Ceram•X Duo-enamel shade**

Group Sample	1	2	3	4	5	6
1	73.3	82.4	72.3	75.1	63.9	68.9
2	69.5	74.1	86.5	72.6	62.2	69.9
3	78.3	69.0	69.6	85.9	71.6	75.8
4	69.0	68.8	67.9	70.3	69.5	70.7
5	66.2	72.9	72.5	70.7	76.7	70.1
6	66.2	74.7	72.4	70.4	67.9	76.5
7	74.7	75.9	78.5	77.5	80.1	72.8
8	73.0	77.8	78.3	70.7	75.0	77.7
9	69.0	74.8	84.2	67.0	72.2	72.7
10	72.9	72.6	71.1	63.2	67.4	73.5
Mean	71.5	74.3	75.3	72.3	70.7	72.9
SD	4.75	4.00	6.28	6.18	5.62	3.03

## APPENDIX IV

POSTER PRESENTATION AT SIXTH SCIENTIFIC MEETING OF IADR  
MALYSIAN SECTION AND EIGHTH ANNUAL GENERAL MEETING  
(10.3.2007) AT FACULTY OF DENTISTRY, SCIENCE AND TECHNOLOGY  
COMPLEX, UNIVERSITY OF TECHNOLOGY MARA, SELANGOR,  
MALAYSIA.

ABSTRACT NO: P-7, PAGE 8

8 SIXTH SCIENTIFIC MEETING OF IADR MALAYSIAN SECTION AND EIGHTH ANNUAL GENERAL MEETING

**P-7**

**Effect of mouthrinses on surface microhardness of selected composite restorative materials**

A. AHMAD\*<sup>1</sup>, N.H. ABU KASIM<sup>1</sup> and N.L. ABU KASIM<sup>2</sup>

(<sup>1</sup>Faculty of Dentistry, University of Malaya, <sup>2</sup>International Islamic University Malaysia)

**Objectives:** To compare the surface microhardness of selected composite restorative material before and after immersion in alcohol containing mouthrinses (Listerine), alcohol-free mouthrinses (Oral-B) and experimental herbal mouthrinses based on plant extract (mouthrinses X, Y and Z). **Methods:** 60 disc-shaped specimens of approximately 10mm x 2mm were prepared from various composites (Spectrum@TPH, Filtek™Z350, Ceram-X mono and Ceram-X duo-enamel shade) using Perspex split mould and was cured for 40 seconds. The irradiated surface was polished using Sof-Lex pop-on polishing discs. The specimens were randomly divided to 6 groups. Microhardness was recorded before immersion (control group) using a load of 200g for 15 seconds using Vickers microhardness tester, (Shimadzu Corp, Kyoto, Japan). All specimens were then immersed in 20ml of Listerine, Oral B- Tooth and gum care alcohol-free mouth rinses, Experimental Mouth rinses X, Y and Z and distilled water for 24 hours at 37° C, after which micro hardness value was measured again. Data collected was analyzed using one-way ANOVA / Games-Howell post-hoc test for multiple comparisons between groups. Specimens were also subjected to surface analysis using AFM (Ambios Technology Universal Scanning Probe Microscopy™). **Results:** Filtek Z350 exhibited the highest Vickers microhardness number (VHN) and Ceram X Duo had the lowest VHN before immersion. All tested composite showed significant decreased in surface microhardness (VHN) compared to before immersion. Filtek Z350 showed the highest VHN and TPH Spectrum showed the lowest VHN after immersion. Ceram X Duo showed the roughest surface before immersion. The surface roughness of Ceram X Mono was high when immersed in experimental mouthrinses.

**Conclusions:** Filtek Z350 exhibited significantly higher VHN compared to other composites tested. All composites showed significant decreased in VHN compared to before immersion. There was no significant different of VHN between mouthrinses, however it was material dependent. This study was supported by the Vot F:Grant no F0350/2005C, University of Malaya