ABSTRACT

**Purpose of the study:** To evaluate the effects of different pH (acidic, neutral and alkaline) on microleakage of the Class V composite restoration.

**Materials and Method:** Class V cavities were prepared on buccal surface of human premolar, 2 mm away from cementoenamel junction and restored with composite (3M Filtek™ Z 250) using Scotchbond™ Etching Gel and Adper™ Single Bond 2. The teeth were immersed in distilled water for one week to achieve complete polymerization and then thermocycled for 500 cycles. The specimens were dried and divided into 7 groups of 10 teeth each: group A: pH 2.5, group B: pH 3.5, group C: pH 4.5, group D: pH 5.5, group E: pH 7 (control group), group F: pH 8.5 and group G: pH 11.5. After 10 minutes immersion in respective pH solutions, specimens were dried and coated with two layers of nail varnish exposing 2 mm of enamel around the restoration. Root tips of the teeth were sealed with sticky wax. Subsequently, the specimens were immersed in 2 % methylene blue dye for 24 hours. The specimens were then washed, mounted in epoxy resin and sectioned longitudinally. Image Analyzer was used to examine the occlusal and cervical microleakage using scoring system of 0, 1, 2 and 3. Data obtained was analyzed using Chi-Squared and Fisher’s Exact tests.

**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%, whereas 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 and Fisher’s Exact tests showed no significant difference in microleakage at occlusal or cervical margins between the pH groups with p=0.834 (p> 0.05) and 0.339 (p> 0.05).
Conclusions: Within the limitation of this study, it can be concluded that different pH cause no significant effect on occlusal or cervical microleakage in a Class V composite restoration.
ACKNOWLEDGEMENTS

First of all, all praises to Almighty Allah for giving me the strength, perseverance and health to complete this study and easing the hurdles that came my way during the course.

I would like to express my thanks and gratitude to:

My supervisor Dr. Noor Azlin Binti Yahya for her guidance, encouragement and concern throughout the preparation of this project.

Professor Dato’ Dr. Abdul Aziz Bin Abdul Razak, Head of Department of Conservative Dentistry, Faculty of Dentistry, University of Malaya and the staffs of the department for their invaluable contribution to my post-graduate course.

Staff of the research laboratory especially Ms Yvonne and Cik Kasmaliza for all their help in using the equipment throughout the study.

All my colleagues, for their help and support throughout the course.

Ministry of health for giving me the opportunity to pursue my post-graduate education.

My husband, Jaafar Bin Rihan, for all his love, patience, support and encouragement, and finally to my sons, Muhammad Salman, Muhammad Ikhmal and Muhammad Adam for their understanding and unfailing love.
DECLARATION

Name: Zaini Binti Aziz (I.C/Passport No: 681127-02-5376)

Registration/Matric No: DGB 040005

Name of Degree: Master of Clinical Dentistry

Title of Project/Research Report/Dissertation/Thesis (“this work”)

EFFECTS OF DIFFERENT pH ON MICROLEAKAGE OF CLASS V COMPOSITE RESTORATION: AN IN-VITRO STUDY

Field of Study: Conservative Dentistry

I do solemnly and sincerely declare that:

(1) I am the sole author/writer of this work;
(2) This work is original;
(3) Any use of any work in which copyright exists was done by way of fair dealing and for permitted purposes and any excerpt or extract from, or reference to or reproduction of any copyright work has been disclosed expressly and sufficiently and the title of the Work and its authorship have been acknowledged in this Work;
(4) I do not have any actual knowledge nor do I ought reasonably to know that the making of this work constitutes an infringement of any copyright work;
(5) I hereby assign all and every rights in the copyright to this Work to the University of Malaya (“UM”), who henceforth shall be owner of the copyright in this Work and that any reproduction or use in any form or by means whatsoever is prohibited without the written consent of UM having been first had and obtained;
(6) I am fully aware that if in the course of making this Work I have infringement any copyright whether intentionally or otherwise, I may be subjected to legal action or any other action as may be determined by UM.

Candidate’s signature                                      Date

Subscribed and solemnly declared before,

Witness’s signature

Name: Dr. Noor Azlin Binti Yahya                          Date

Designation: Supervisor/Lecturer