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<b>Management of oral candidiasis</b> IGN. Putra Dermawan	77-81
<b>The correlation between smoking habit and blood pressure towards pre-clinic dentistry students of prof. Dr. Moestopo (beragama) university jakarta</b> Retno Damayanti, Rizfira Ananda	82-92
<b>The effectivity of platelet rich plasma (prp) gel on blood clot formation process After tooth extraction on young balinese dog</b> Putu Sulistiawati Dewi	93-98
<b>The application of color in dental room treatment to reduce patient anxiety</b> Marta Juslily	99-107
<b>The effect of trauma from occlusion on periodontal tissue</b> Abdul Gani Soulisa	108-115
<b>Allergy to dental implant as a reason for implant failure</b> Durra Mufida	116-121
<b>Salivary flow rate and total protein concentration in asthmatics, treated with corticosteroids and sympathomimetics drugs</b> Nur Isya Sagita, Shanty Chairani, Sulistiawati	122-126
<b>Esthetic complex treatment, an interdisciplinary of periodontology and dentalconservative</b> Risya Cilmiaty, Anton Kusumo Widagdo, Adisty Restu Poetri	127-132
<b>Calcium hydroxide as intracanal medication for non surgical endodontic treatment on a maxillary right lateral incisor with periapical lesion</b> Deli Mona	133-140
<b>The difference between saliva ph and blood glucose levels before and after consuming white rice (oriza sativa) and casava (manihot esculenta crantz)</b> Fahmi Hamjah Siregar, DwiPriyatmoko, Sulistiyani	141-151
<b>The ph effect toward the micro structure and surface hardness of hybrid composite</b> Elin Karlina, Zulia Hasratiningsih, RennyFebrida	152-159

# The pH effect toward the micro structure and surface hardness of hybrid composite

Elin Karlina, Zulia Hasratiningsih, RennyFebrida

Dental Materials Science and Technology Department,

Faculty of Dentistry, Padjadjaran University

Email address : [elin.karlina@fkg.unpad.ac.id](mailto:elin.karlina@fkg.unpad.ac.id)/[marvianza\\_78@yahoo.com](mailto:marvianza_78@yahoo.com)

## ABSTRACT

Surface hardness is one of important factors to determine the long life and aesthetic of composite restoration. The pH changes in the oral cavity can influence the surface hardness of composite restoration. The aim of this study is to find out the pH effect toward micro structure and surface hardness of the composite restoration. Materials used in this study was hybrid composite CavexKwadrant Universal LC brand Shade A3. The samples were in cylindrical form with diameter of 8 mm and 2 mm of thickness. The samples were 30 divided into 3 groups. Each group consisted of 10 samples, that were control (no treatment, as grup A), immersed in acid solution (lactic acid) 37°C for 14 days as grup B and immersed in basic solution (NaOH) in 60°C for 14 days as grup C. Each group divided into 2 which 5 samples were polished and the other 5 samples were not polished. All of the samples were characterized with SEM for micro structure and tested for surface hardness. The results showed the decreasing of surface hardness value after immersion in acid and also in basic solution. The surface hardness value of the composite which not been polished lower compared to the polished samples, both before and after immersion. The SEM result showed that there was any change of micro structure of the composite after immersion compared to the control group. As a conclusion there is any effect of pH toward the hybrid composite in terms of changes in surface micro structure and lowered surface hardness.

**Key words** :pH, surface hardness, micro structure, hybrid composite

## INTRODUCTION

Recently, composites have been increasingly popular, surpassing amalgam due to their aesthetic values and lower side effects.<sup>1,2</sup>Besides considering their aesthetic performance, composites also have superior mechanical properties, one of which is surface hardness. The various mechanical properties that are present in composites are influenced by the difference in matrix composition, filler and in terms of size and distribution of the fillers themselves. The decrease in size and increase in filler volumes directly increases