Pengaruh pH Beberapa Jenis Obat Kumur Herbal Terhadap Kekerasan Permukaan Resin Komposit Bulk-Fill = The Impact of Several Types of Herbal Mouthwash pH Level on The Surface Hardness of Bulk Fill Composite Resin

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Abstrak

Resin komposit bulk-fill adalah jenis resin komposit yang dapat menghemat waktu pengerjaan dan mengurangi kemungkinan jebakan udara karena mempunyai kemampuan untuk berpolimerasi secara memadai dengan depth of cure 4-5 mm. Ketahanan resin komposit terhadap keausan dipengaruhi oleh beberapa faktor salah satunya adalah kekerasan permukaan. pH asam adalah salah satu faktor yang bisa menyebabkan terjadinya penurunan tingkat kekerasan resin komposit. Obat kumur herbal adalah salah satu produk dengan variasi pH yang banyak digunakan untuk mengatasi masalah pada rongga mulut. Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh pH beberapa jenis obat kumur herbal terhadap kekerasan permukaan resin komposit bulk-fill Metode: Tiga puluh dua (32) spesimen resin komposti bulk-fill (Tetric® N-Ceram bulk-fill shade IVA dengan diameter 6 mm dan tinggi 3 mm) dibagi menjadi 4 kelompok dengan masing-masing kelompok terdiri dari 8 spesimen. Masing-masing spesimen akan dilakukan perendaman pada suhu 370 C selama 6 jam dalam 20 ml larutan yang terdiri dari akuades (pH 6,78), pepsodent herbal natural (pH 6,54), total care lemon herbs (pH 5,04), listerine gum care jahe herbal (pH 4,07). Sebelum dan sesudah perendaman masing-masing spesimen akan diukur nilai kekerasan permukaan dengan Knoop Hardness Tester (HMV-G®: G21 Series Micro Vickers Hardness Tester Shimadzu) Hasil: Terjadi penurunan kekerasan permukaan resin komposit Tetric® N-Ceram Bulk-fill setelah direndam dalam semua larutan. Nilai rata-rata kekerasan permukaan sebelum perendaman untuk semua spesimen adalah 37,89±0,50 KHN. Sedangkan nilai rata-rata kekerasan permukaan sesudah perendaman pada masing-masing kelompok adalah akuades (pH 6,78) sebagai kelompok kontrol 36,36±1,01 KHN, obat kumur pepsodent 34,31±0,65 KHN, total care lemon herbs (pH 5,04) 32,41±0,61 KHN, obat kumur listerine gum care jahe herbal 30,68±0,43 KHN. Berdasarkan hasil uji One-Way ANOVA dan uji Post Hoc Post Hoc Tamhane menunjukkan bahwa terdapat perbedaan bermakna ($p < 0,05$) antar semua kelompok perendaman. Kesimpulan: Terdapat penurunan nilai kekerasan permukaan resin komposit bulk-fill setelah dilakukan peredaman dalam larutan akuades, pepsodent herbal natural, total care lemon herbs, listerine gum care jahe herbal mouthwash selama 6 jam dan penurunan nilai kekerasan permukaan tertinggi terjadi kelompok listerine gum care jahe herbal dan penurunan kekerasan terendah terjadi pada kelompok akuades.

.....Background: Bulk-fill resin composite is a type of resin composite that not only allows minimal processing time but also minimal possibility of air trapping due to its ability to properly polymerize with the depth of cure 4-5 mm. There are several factors that affect the wear resistance of resin composite, one of which is surface hardness which is highly impacted by the acidity level (pH). Herbal mouthwash is an example of product that offers wide variety of pH content used for oral cavity treatment. Aims: This study aims to determine the impact of pH level of several herbal mouthwash on the surface hardness of bulk-fill resin composite. Methods: There were thirty two (32) bulk fill resin composite specimens prepared (Tetric®

N-Ceram bulk-fill shade IVA with a diameter of 6 mm and a thick of 3 mm), which then equally divided into four different groups, based on the solution used for soaking. The first group used 20ml of distilled water that has pH of 6.78. The second group was soaked in 20 ml of pepsodent herbal natural mouthwash solution with slightly lower pH content of 6.52. Group three had 20 ml of total care lemon herbs with even lower pH content of 5.04. Lastly, the last group (group four) used 20ml listerine gum care herbal ginger solution that has the least pH content of 4.07. The soaking process for each specimen was done at temperature of 37 celcius for approximately six hours. The measurement of the specimens' surface hardness was performed using Knoop Hardness Tester (HMV-G®: G21 Series Micro Vickers Hardness Tester Shimadzu), prior to and after the soaking process. Results: There was a decrease in the surface hardness of the Tetric® N-Ceram bulk-fill composite resin after being immersed in all solutions. The average value of surface hardness before immersion for all specimens was 37.89±0.50 KHN. While the average value of surface hardness after soaking in each group was distilled water (pH 6.78) as the control group 36.36±1.01 KHN, Pepsodent mouthwash 34.31±0.65 KHN, total care lemon herbs (pH 5.04) 32.41±0.61 KHN, mouthwash listerine gum care herbal ginger 30.68±0.43 KHN. Based on the One-Way ANOVA test and the Post Hoc Tamhane test, it can be inferred that there is a significant difference ($p<0.05$) among the immersion groups. Conclusion: There was a decrease in the surface hardness value of the Bulk-fill composite resin after soaking in a solution of distilled water, natural herbal pepsodent, total care lemon herbs, listerine gum care ginger herbal mouthwash for 6 hours and the highest decrease in surface hardness value occurred in the listerine gum care herbal ginger group and the lowest decrease in hardness occurred in the distilled water group.