

ABSTRAK

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Program Studi : Kedokteran Gigi
Judul : Pengaruh *Tea tree oil* terhadap kekasaran permukaan (*surface roughness*) pada Gigi tiruan resin akrilik polimerisasi panas dan resin akrilik *3d printed* ”

Resin akrilik merupakan bahan yang paling sering digunakan sebagai basis gigi tiruan, baik resin akrilik polimerisasi panas maupun resin akrilik hasil pencetakan tiga dimensi (*3D printed*). Salah satu sifat permukaan yang perlu diperhatikan adalah kekasaran permukaan karena dapat memengaruhi akumulasi plak, perubahan warna, dan kenyamanan pasien. *Tea Tree Oil (TTO)* dikenal memiliki sifat *antimikroba* dan berpotensi digunakan sebagai bahan pembersih gigi tiruan, namun pengaruhnya terhadap kekasaran permukaan resin akrilik masih perlu diteliti. Penelitian ini bertujuan untuk mengetahui pengaruh perendaman *Tea Tree Oil* dengan berbagai konsentrasi terhadap kekasaran permukaan resin akrilik polimerisasi panas dan resin akrilik *3D printed*. Penelitian ini merupakan penelitian eksperimental laboratoris dengan rancangan *post-test only control group*. Sampel terdiri dari resin akrilik polimerisasi panas dan resin akrilik *3D printed* yang direndam dalam larutan *Tea Tree Oil* dengan variasi konsentrasi selama waktu tertentu. Pengukuran kekasaran permukaan dilakukan sebelum dan sesudah perendaman menggunakan alat pengukur kekasaran permukaan. Data dianalisis secara statistik. Hasil penelitian menunjukkan bahwa perendaman *Tea Tree Oil* meningkatkan kekasaran permukaan resin akrilik polimerisasi panas dan resin akrilik *3D printed*, namun variasi konsentrasi *Tea Tree Oil* tidak menunjukkan perbedaan yang bermakna. Selain itu, tidak terdapat perbedaan signifikan antara kekasaran permukaan resin akrilik polimerisasi panas dan resin akrilik *3D printed*. Berdasarkan hasil penelitian dapat disimpulkan bahwa *Tea Tree Oil* memengaruhi kekasaran permukaan resin akrilik, namun pengaruhnya relatif sama pada kedua jenis resin.

Kata kunci:

Tea Tree Oil, kekasaran permukaan, resin akrilik polimerisasi panas, resin akrilik *3D printed*

ABSTRACT

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Tittle : *The Effect of Tea Tree Oil on Surface Roughness of Heat-Polymerized Acrylic Resin and 3D-Printed Acrylic Resin Denture Bases*

Acrylic resin is the most commonly used material for denture bases, including heat-polymerized acrylic resin and three-dimensional (3D) printed acrylic resin. One important surface property that must be considered is surface roughness, as it can influence plaque accumulation, discoloration, and patient comfort. Tea Tree Oil (TTO) is known for its antimicrobial properties and has potential use as a denture cleanser; however, its effect on the surface roughness of acrylic resin remains unclear. This study aimed to determine the effect of immersion in Tea Tree Oil at various concentrations on the surface roughness of heat-polymerized acrylic resin and 3D-printed acrylic resin. This study was an experimental laboratory study with a post-test only control group design. The samples consisted of heat-polymerized acrylic resin and 3D-printed acrylic resin specimens, which were immersed in Tea Tree Oil solutions with different concentrations for a specified period. Surface roughness measurements were performed before and after immersion using a surface roughness measuring device. The obtained data were analyzed statistically. The results showed that immersion in Tea Tree Oil increased the surface roughness of both heat-polymerized acrylic resin and 3D-printed acrylic resin. However, variations in Tea Tree Oil concentration did not show statistically significant differences in surface roughness. In addition, there was no significant difference in surface roughness between heat-polymerized acrylic resin and 3D-printed acrylic resin. Based on the results of this study, it can be concluded that Tea Tree Oil affects the surface roughness of acrylic resin denture base materials, with a relatively similar effect on both heat-polymerized and 3D-printed acrylic resins.

Keywords:

Tea Tree Oil, surface roughness, heat-polymerized acrylic resin, 3D-printed acrylic resin