

INTISARI

Pemenuhan estetika, kenyamanan pasien, dan mengurangi hilangnya jaringan gigi yang sehat pada pembuatan gigi tiruan dapat dilakukan dengan *fiber reinforced composite*, yaitu matriks komposit yang diperkuat dengan *fiber*. *Glass fiber dental* paling banyak digunakan oleh praktisi kedokteran gigi, namun relatif mahal dan memiliki jumlah terbatas, sehingga dibutuhkan *glass fiber non dental* sebagai bahan alternatif. Salah satu syarat yang harus terpenuhi bagi material bahan gigi tiruan adalah kekuatan fleksural untuk menahan beban pengunyahan. Kekuatan fleksural dipengaruhi oleh berbagai faktor, diantaranya orientasi dan jenis dari *fiber* yang digunakan. Tujuan dari penelitian ini untuk melihat pengaruh orientasi dan jenis *glass fiber non dental* terhadap kekuatan fleksural.

Metode penelitian yang digunakan eksperimental dengan sampel FRC berukuran 65 x 10 x 2,5 mm yang diperkuat *glass fiber non dental* orientasi *mats*, *roving*, *woven roving*, dan *glass fiber dental* orientasi *roving*. *Glass fiber non dental mats* dan *woven roving* dipotong sesuai dengan panjang dan lebar sampel, sedangkan *glass fiber non dental roving* ditimbang sesuai dengan berat 4 lembar *glass fiber dental roving* untuk memenuhi zona cetakan sampel. *Glass fiber* diberikan perlakuan silanisasi dan ditempatkan pada posisi *tension* di dalam cetakan sampel, kemudian lakukan *finishing* dan *polishing*. Sampel direndam dalam aquades dan disimpan dalam inkubator selama 24 jam sebelum dilakukan uji kekuatan fleksural menggunakan *universal testing machine*.

Hasil dari penelitian ini menunjukkan bahwa jenis glass fiber tidak memiliki pengaruh bermakna terhadap nilai kekuatan fleksural FRC dengan penguat *glass fiber non dental* dan *glass fiber dental*. Orientasi *roving glass fiber non dental* sebagai penguat FRC memiliki nilai kekuatan fleksural lebih besar dibandingkan *glass fiber non dental* dengan orientasi *mats* dan *woven roving*.

Kata kunci : *fiber reinforced composite*, orientasi *fiber*, *glass fiber non dental*

ABSTRACT

Fulfillment of aesthetics, patient comfort, and reducing the loss of healthy tooth tissue in the manufacture of dentures can be done with fiber reinforced composite, which is a composite matrix reinforced with fiber. Dental glass fiber is the most widely used by dental practitioners, but it is relatively expensive and limited in number, so it requires non-dental glass fiber as alternative ingredients. One of the conditions that must be fulfilled for denture material is flexural strength to withstand masticatory loads. Flexural strength is influenced by various factors, including the orientation and type of fiber used. The purpose of this study was to see the effect of orientation and type of non-dental glass fiber on flexural strength.

The research method used was experimental with FRC samples measuring 65 x 10 x 2,5 mm which were reinforced with non-dental glass fiber mats, roving, woven roving, and dental glass fiber roving. Non-dental glass fiber mats and woven roving was cut according to the length and width of the sample, while the non-dental glass fiber roving was weighed according to the weight of 4 sheets of dental glass fiber roving to meet the sample mold zone. Glass fiber is given silanization treatment and placed in the tension position in the sample mold, then finishing and polishing. The samples were immersed in distilled water and stored in an incubator for 24 hours before flexural strength testing using universal testing machine.

The results of this study indicate that the type of glass fiber doesn't have a significant effect on the flexural strength of FRC with reinforced non dental glass fiber and dental glass fiber. The orientation of non-dental glass fiber roving as reinforcement of FRC has greater flexural strength than non-dental glass fiber with mats and woven roving orientation.

Keyword : *fiber reinforced composite, fiber orientation, non-dental glass fiber*