

ABSTRAK

Titanium dioksida merupakan bahan semikonduktor yang terkenal di bidang kedokteran gigi sebagai bahan tambahan restorasi dikarenakan sifatnya yang menguntungkan. Seiring berkembangnya ilmu pengetahuan, membuat dokter gigi memiliki banyak pilihan yang bervariasi dalam memilih bahan tambahan restorasi untuk meningkatkan sifat fleksural pada resin akrilik *self-cured*. Penelitian ini bertujuan Mengetahui pengaruh penambahan konsentrasi filler 1%, 3% dan 5% titanium dioksida (TiO_2) terhadap kekuatan fleksural resin akrilik *self-cured*.

Metode penelitian ini berjenis analitik eksperimental laboratoris dengan rancangan penelitian *post test only group design*. Terdiri dari 4 kelompok resin akrilik *self-cured* tanpa penambahan titanium dioksida, dan dengan penambahan konsentrasi filler 1%, 3% dan 5% titanium dioksida yang masing-masing berjumlah 6 sampel. TiO_2 dilakukan silanisasi dengan *silane coupling agent*. Pembuatan spesimen dengan mencampurkan resin akrilik *self-cured* dan nanopartikel TiO_2 . Sampel diukur dengan *universal testing machine*. Data yang diperoleh dilakukan uji one-way annova dan post hoc.

Hasil penelitian menunjukkan terdapat pengaruh penambahan konsentrasi filler 1%, 3% dan 5% titanium dioksida (TiO_2) terhadap kekuatan fleksural resin akrilik *self-cured*. Hasil penelitian menjelaskan rerata kekuatan fleksural resin akrilik dengan penambahan TiO_2 1% lebih tinggi dari 3 kelompok lainnya ($96,6467 \text{ MPa} \pm 9,35830$). Rerata kelompok kekuatan fleksural resin akrilik dengan penambahan TiO_2 3% merupakan yang paling rendah ($50,1083 \text{ MPa} \pm 12,95518$).

Kata Kunci : *Titanium* dioksida (TiO_2), resin akrilik *self-cured*, kekuatan fleksural

ABSTRACT

Titanium dioxide is a semiconductor material which is well known in dentistry as a restorative additive due to its advantageous properties. As science advances, dentists have a wide variety of options in choosing restoration additives to enhance the flexural properties of self-cured acrylic resins. This study aims to determine the effect of adding filler concentrations of 1%, 3% and 5% titanium dioxide (TiO₂) on the flexural strength of self-cured acrylic resin.

Research method used is laboratory experimental analytic type with a post test only group design. Consisting of 4 groups of self-cured acrylic resin without the addition of titanium dioxide, and with the addition of filler concentrations of 1%, 3% and 5% titanium dioxide, each of which amounted to 6 samples. TiO₂ is silanized with a silane coupling agent. Making specimens by mixing self-cured acrylic resin and TiO₂ nanoparticles. Samples were measured by a universal testing machine. The data obtained were carried out by one-way annova and post hoc tests.

The results showed that there was an effect of adding filler concentrations of 1%, 3% and 5% titanium dioxide (TiO₂) on the flexural strength of self-cured acrylic resin. The results showed that the average flexural strength of acrylic resin with the addition of 1% TiO₂ was higher than the other 3 groups (96.6467 MPa ± 9.35830). The average flexural strength group of acrylic resin with the addition of TiO₂ 3% was the lowest (50.1083 MPa ± 12.95518)

Keywords: Titanium dioxide (TiO₂), self-cured acrylic resin, flexural strength

