

**PERBANDINGAN KEKUATAN FLEKSURAL SEMEN
IONOMER KACA MODIFIKASI RESIN GLASS
HYBRID DAN SEMEN IONOMER KACA
MODIFIKASI RESIN BIOAKTIF**

INTISARI

Semen ionomer kaca modifikasi resin (SIKMR) *glass hybrid* dan SIKMR bioaktif merupakan material restorasi gigi yang relatif baru. Keawetan material dapat ditentukan melalui sifat mekanisnya, seperti kekuatan fleksural. Kekuatan fleksural dipengaruhi oleh struktur dan komposisi bahan, serta proses penuaan dalam rongga mulut. Tujuan dari penelitian ini adalah untuk mengetahui apakah terdapat perbedaan kekuatan fleksural SIKMR *glass hybrid* dan SIKMR bioaktif, serta apakah terdapat pengaruh penuaan terhadap kekuatan fleksural kedua bahan.

Subjek penelitian adalah 32 spesimen SIKMR *glass hybrid* dan SIKMR bioaktif berbentuk balok berukuran 25 mm x 2 mm x 2 mm yang dibagi menjadi empat kelompok: SIKMR *glass hybrid* sebelum penuaan, SIKMR *glass hybrid* setelah penuaan, SIKMR bioaktif sebelum penuaan, dan SIKMR bioaktif setelah penuaan. Kelompok sebelum penuaan direndam selama 24 jam dan kelompok setelah penuaan selama 14 hari dalam saliva pH 6,8 serta inkubator bersuhu 37°C. Pengujian kekuatan fleksural dilakukan menggunakan *universal testing machine*.

Data hasil penelitian diuji menggunakan uji ANAVA dua jalur dengan uji *post-hoc* LSD ($\alpha = 0,05$). Hasil penelitian menunjukkan terdapat perbedaan kekuatan fleksural di antara kedua bahan dan terdapat pengaruh penuaan terhadap kekuatan fleksural SIKMR *glass hybrid*. Hasil uji LSD menunjukkan perbedaan bermakna antara kelompok SIKMR *glass hybrid* sebelum penuaan dan kelompok SIKMR bioaktif sebelum penuaan, kelompok SIKMR *glass hybrid* sebelum dan setelah penuaan, serta kelompok SIKMR *glass hybrid* sebelum penuaan dan SIKMR bioaktif setelah penuaan. Akan tetapi, tidak terdapat perbedaan bermakna antara kelompok SIKMR bioaktif sebelum dan setelah penuaan. Kesimpulan dari penelitian ini adalah terdapat perbedaan kekuatan fleksural SIKMR *glass hybrid* dan SIKMR bioaktif, terdapat pengaruh proses penuaan pada kekuatan fleksural SIKMR *glass hybrid*, serta tidak ada pengaruh penuaan pada kekuatan fleksural SIKMR bioaktif.

Kata kunci: semen ionomer kaca modifikasi resin *glass hybrid*, semen ionomer kaca modifikasi resin bioaktif, kekuatan fleksural, penuaan

***FLEXURAL STRENGTH COMPARISON OF
GLASS HYBRID AND BIOACTIVE RESIN
MODIFIED GLASS IONOMER***

ASBTRACT

Glass hybrid and bioactive resin modified glass ionomer (RMGI) are new restoration materials in dentistry. Restoration longevity can be determined through its mechanical properties, such as flexural strength. Structure, composition, and aging process in oral cavity determine material's flexural strength. The aim of this study was to investigate the difference of flexural strength between glass hybrid and bioactive RMGI, and to determine the effect of aging toward their flexural strength property.

Thirty-two cuboid specimens of glass hybrid and bioactive RMGI with 25 mm x 2 mm x 2 mm in size were used. The specimens were divided into four groups: glass hybrid RMGI before aging, glass hybrid RMGI after aging, bioactive RMGI before aging, and bioactive RMGI after aging. The before aging group was immersed for 24 hours and the after aging group was immersed for 14 days in saliva pH 6,8 and incubators at 37°C. Flexural strength was measured using universal testing machine.

The data result was analyzed using two-way ANOVA with LSD post-hoc test ($\alpha = 0,05$). The result showed that there was difference of flexural strength between two materials, and aging process affected glass hybrid RMGI flexural strength. LSD test showed significant differences between before aging group of glass hybrid and bioactive RMGI, glass hybrid RMGI before and after aging, and glass hybrid RMGI before aging and bioactive RMGI after aging. However, there was no significant difference between bioactive RMGI before and after aging group. It can be concluded that there was difference of flexural strength between glass hybrid and bioactive RMGI, there was aging effect to glass hybrid RMGI flexural strength, and there was no effect of aging to bioactive RMGI flexural strength.

Keywords: glass hybrid resin modified glass ionomer, bioactive resin modified glass ionomer, flexural strength, aging