Abstract: INTRODUCTION
Recent advances in dental materials have led to the production of smart materials. Recently, addition of bioactive materials to glass-ionomer cements has resulted in new capabilities beyond the beneficial effects of fluoride release. This in vitro study compared the flexural strengths (FS) of a resin-modified glass-ionomer containing bioactive glass (RMGIBAG) with that of a commonly used resin-modified glass-ionomer (RMGI).

METHODS AND MATERIALS:
A total of forty RMGI and RMGI-BAG bars (20 × 4 × 4 mm) were prepared in stainless steel molds. Each of the RMGI and RMGI-BAG bars was set for FS test. FS values of the specimens were measured using three-point bending test at a crosshead speed of 0.5 mm/min. The surface changes and the amounts of elements on the materials' surfaces were also evaluated by SEM/EDS analyses. Data were analyzed using SPSS 11.5 and t-test (α = 0.05).

RESULTS:
The means ± SD in the study groups were 61.46 ± 22.52 and 39.90 ± 9.11 MPa respectively. There were significant differences between FS of the two study groups (p = 0.003).

CONCLUSION:
While adding 20 wt% of BAG to the RMGI powder evaluated in this study decreases FS of the material significantly, the mean value of FS is in the acceptable range of the reported FS values for conventional GIs and RMGIs that are commercially available for clinical use. Further studies are recommended.

flexural strengths, resin-modified glass-ionomer, bioactive glass

Presentation: Oral