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Antibacterial and mechanical assays of resin modified glass ionomer containing propolis extract

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Introduction & Objective: The antibacterial efficacy of restorative materials had an important role in preventing recurrent caries. The objective of this study was to evaluate *in-vitro* antibacterial and mechanical assays of Vitremer containing ethanolic extract of propolis (EEP).

Materials & Methods: 1) Antibacterial assay: Standard strain of *Streptococcus mutans* and *Lactobacillus acidophilus* were used for the determination of minimum inhibitory concentration (MIC) of EEP/Vitremer. 2) Mechanical assay - A shear bond strength (SBS): 60-half crowns of non-carious extracted from 2nd primary molars were placed at standard moulds containing teflon disc that had 4 mm x 3 mm central hole and divided into 4 groups (n=15) according to the different EEP concentrations. Group I: 10%, group II: 25%, group III: 50% EEP-Vitremer mixture, and group IV (control): 0% EEP/Vitremer and SBS was assessed using Instron machine B-Microhardness: Sixty standard disc-shaped specimens were prepared from mixture 0%, 10%, 25%, and 50%, n=15 and nanoindentation value was recorded. Data were analyzed using one-way ANOVA and post-hoc test.

Results: Only MIC of 10%, 25%, and 50% mixture showed growth inhibition against S. mutans, compared to 25% and 50% against *L. acidophilus*. SBS showed that 0% EEP recorded the highest value followed by 10% mixture but the difference was not significant ($p>0.05$), while 25% and 50% reported the lowest values and the differences were significant ($p<0.05$). 25% and 50% mixtures recorded the highest significant microhardness ($p<0.05$). 0% EEP and 10% mixtures displayed no significant differences between them ($P>0.05$).

Conclusions: 25% EEP-Vitremer mixture was the most suitable concentration as it exhibits significant antibacterial and mechanical assays.

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