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**Title:** Comparative evaluation of microleakage of class II resin composite restorations with three different curing methods of LED and QTH equipments.

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**Abstract:** Background: The use of composite material for posterior teeth due to the esthetic demands of patients has been increased. The application of these materials has problems such as microleakage and post operative sensitivity. As a solution the best light curing system can be considered.

Objective: The aim of this study was to comparative evaluation of microleakage of class II resin composite restorations with three different curing methods of LED and QTH equipments.

Materials and Methods: 100 non-caries human premolars were used for this study. Standardized class II cavities were prepared. The teeth were divided into 4 groups of 25 (one control and 3 experimental groups). After simulating the pulpal pressure, all the cavities were restored with the same composite (valux plus 3M, USA). Every experimental group exposed to one of the curing protocols of LED (conventional, pulse-delay, ramped) for 20 s and control group for 20 s was cured by QTH. The restorations were thermocycled (500 times, 5-55°C, 5 seconds dwell time), dyed, sectioned mesiodistally and viewed under a stereomicroscope (40x). They were then scored on a 0-4 scale based on microleakage. The data were analyzed using the chi-square test.

Results: No significant difference was demonstrated between the different LCUs at the enamel side (p>0.05). At the dentin side LED could significantly reduce microleakage (p<0.05).

Conclusion: Between the two sets of LED and QTH, the role of LED curing in all modes is more effective for reducing the microleakage.

LED and QTH almost completely eliminate the microleakage on enamel side but none of them can absolutely eliminate microleakage on dentin side.

**Presentation:** Oral