

FTIR and SEM of a novel chemical conditioning
on the zirconia intaglio surface.

Abstract

Objectives: The aim of this study was to evaluate chemical and topographical changes in the intaglio zirconia surface induced by chemical conditioning solutions using FTIR and SEM analysis. **Material and method:** twelve plates for each FTIR and SEM tests from each zirconia materials (UPCERA HT White, BruxZir® Solid Zirconia, and Copran® Multilayer), milled by a Yenadent CAD/CAM system, sintered and divided randomly into a three groups. A different surface conditioning was applied to the intaglio surface of each group: 30% hydrogen peroxide, 30% citric acid and control group. **Result and discussion:** by using of the FTIR spectroscopy, an evidence of new bands formation appeared at 1637cm^{-1} and 3352cm^{-1} due to the high oxidizing effect of hydrogen peroxide, and at 630cm^{-1} and 1663cm^{-1} due to the chelating action of citric acid, and simultaneously, SEM assessment of the surface topography took place, to identify lines, scratches, or surface dissociation that appeared on the intaglio zirconia surface after conditioning. **Conclusion:** such analysis provides an enhancement of new convenient, less expensive, reliable trials to improve micro-bond strength of luting cement to Y-TZP ceramics.