OSC31: Evaluation of the Bond Strength of New Tissue Conditioner with Addition of PMMA Resin

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Purpose: The in vitro study was to evaluate the influence on bond strength to PMMA denture base resin regard the new type tissue conditioner (NTU-TC) using acetyl tribute citrate (ATBC), acetyl tributyl citrate (ATBC) and a novel hyperbranched polyester (TAH).

Materials and Methods: The study groups were divided into 4 combinations (n=10) of tissue conditioner, which added 5, 10, 15, and 20 weight percentages (wt%) poly(methyl methacrylate) (PMMA) to poly(ethyl methacrylate) (PEMA) powder and mixed with the liquid consisted of 78.3wt% ATBC, 8.7wt% TAH, and 13wt% alcohol, with gelation times between 120 and 180 seconds. The original NTU-TC was used as the control group for comparison. Each cylinder samples including 2 resin blocks and the tested tissue conditioner (7.07 cm^2 cross-sectional area x 3 mm thickness) placed between the blocks. After immersion in water at 37°C for 0, 1, 3, 7, 14, and 28 d. The tensile bond strength was examined using a universal testing machine at a crosshead speed of 10 mm/min. The failure mode was also observed.

Result: The tensile bond strength of control group was 0.46 MPa. Addition of 5, 10, 15 and 20 wt% PMMA to the NTU-TC showed similar values of bond strength. The failure mode among all the groups was all adhesive failure.

Conclusion: Within the limitation of this study, addition of different weight percentages of PMMA to the powder of NTU-TC did not have the influence on the increase of bond strength to PMMA denture base resin.

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