**Effect of thermomechanical fatigue on shear strength between a conventional and an experimental polymer for prosthetic application**

**Abstract**

The incorporation of antimicrobial agents may influence the mechanical properties of acrylic resins. Thus, the use of these agents only in regions of dental prostheses subject to greater contamination may be an alternative. This study evaluates the effect of thermomechanical fatigue on the bond strength between a conventional and an experimental acrylic resin incorporated with nanostructured silver vanadate decorated with silver nanoparticles (AgVO3). Sixty specimens (Ø13mm x 23mm height) in self-curing resin were obtained and divided into groups according to the experimental resin incorporated with AgVO3 (Ø4mm x 6mm height): G1–Conventional x Conventional, G2–Conventional x 2.5% of AgVO3, G3–Conventional x 5% of AgVO3. Ten samples of each group were subjected to bond strength analysis after manufacture, and ten were previously submitted to 1.200.000 cycles with 98N load and 2Hz/second frequency and alternating baths of 5ºC, 37ºC and 55ºC. The fracture area was analyzed.  The data were submitted to analysis of variance of two-factors with Bonferroni adjustment for *post hoc* comparisons (α=0.05) was used. The fatigue did not affect the bond strength (p=0.416), however, there was influence of the AgVO3 concentration on the bond strength between the resins (p=0.013). Mixed failures with adhesive predominance were observed in samples without AgVO3 and cohesive failures in samples with the nanomaterial. The use of AgVO3 can improve or maintain the bond strength between resins with no thermomechanical fatigue influence.

***Keywords:*** Acrylic resins; Products with antimicrobial action; Nanotechnology; Shear strength; Thermomechanical fatigue