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**Physico-Mechanical Properties of Universal Composite Resins After Aging**

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**Objectives** To evaluate the effect of three aging procedures on flexural strength, elastic modulus, and microhardness of several universal resin composites. Water sorption, solubility, and degree of cure were also determined.

**Methods** Five universal resin composites: Omnichroma (Omnichroma), G-ænial A'Chord (Achord), Essentia Universal (Essentia), Filtek Universal shade A2 (FUniversal) and Tetric Prime (Tetric) were compared to Filtek XTE Supreme (Supreme), used as control. Specimens were subjected to three aging procedures: 1) 14 days in artificial saliva at 37°C, 2) 10,000 thermo-cycles in distilled water (5-55°C), and 3) 10,000 thermo-cycles in distilled water (5-55°C) followed by storage in 75% ethanol (48h, 37°C). Flexural strength and elastic modulus in a three-point bending test (ISO 4049) (n=10) and microhardness (VHN) (n=5) were determined. Water sorption and solubility tests (n=5) were also performed following ISO 4049:2009 and degree of cure (%) (n=3) was analyzed by FTIR. Data were analyzed using Kruskal-Wallis with Bonferroni correction, one-way ANOVA and Tukey post-hoc tests (p<0.05)

**Results** FUniversal showed the highest flexural strength and elastic modulus values. Thermocycling aging reduced flexural strength and elastic modulus of all composites except elastic modulus of FUniversal. Supreme was the hardest composite and Essentia was the softer, before and after aging processes. Regarding sorption, Tetric, Omnichroma and FUniversal showed lower values than Supreme. Achord, Essentia and Omnichroma yielded higher solubility than Supreme. No differences were found in degree of cure among universal resin composites and Achord, Omnichroma and Tetric obtained higher percentage than Supreme.

**Conclusions** Supreme and FUniversal showed higher mechanical properties than other universal composites tested. Thermocycling decreased flexural strength of all composites. Thermocycling followed by ethanol reduced flexural strength and elastic modulus of all materials, except elastic modulus of FUniversal. Microhardness values were less affected after aging, and similar percentages of degree of cure were measured for all composites.