

## **Abstract:**

### **The effect of pre-heating on water sorption and solubility of bulk-fill resin composites**

**Background:** The present study was aimed to evaluate the effect of pre-heating of bulk - fill resin composites on water sorption and solubility of them.

**Material and Methods:** In this in vitro study, 102 cylindrical samples were prepared by a Teflon mold with a diameter of 6 mm and a thickness of 4 mm; the samples were divided into two groups (Pre Heat to 65°C and Without Pre Heat) and the solubility and water sorption of three types of composite bulkfill: Xtrafil (vocco,cuxhaven,germany), Tetric N ceram (vivadent clinical,leichtenstein), Filtek 3M bulkfil (3M,ESPE,St PAUL, MN, USA) with 17 samples in each group were examined. WSP formula was used to evaluate the water sorption and Wsl formula was used for water solubility. Measurements were performed 24 hours later and 3 weeks later. Finally, using the Mann–Whitney Test , Kruskal-Wallis Test and with using SPSS software version 20 at a significance level of less than 0/ 05 datas were analyzed.

**Results:** Pre-heating did not have any statistically significant effect on the mean values and standard deviation of water sorption and solubility of bulk-fill resin composites(Tetric N-Ceram Bulk Fill, X-tra Fill and 3M Filtek) ( $p>0.05$ ). The mean and standard deviation of water sorption (WSP1, WSP2) and solubility (WSL1, WSL2) in Tetric N ceram composite were higher than Filtek 3M bulkfil and Xtrafil composite, respectively. Moreover the amount of water sorption and solubility of the studied composite resins was significantly different ( $P<0.05$ ).

**Conclusions:** Pre-heating did not have any effect on water sorption and solubility of bulk-fill resin composites. Moreover, the amount of water sorption and solubility of various bulk-fill resin composites were not similar.

**Key words:** Composite, Bulk fill Composite Resin, Water Sorption, Solubility, Temperature.