

A Comparative Analysis of Cyclic Fatigue of a New Preheated Machined CM Wire Endodontic Files after Exposure to Different Irrigants

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Aim: Analysis of cyclic fatigue of a new preheated machined CM wire MPro endodontic files after exposure to lycopene, curcumin and Sodium hypochlorite for two different immersion observation periods; 5 minutes and 10 minutes

Methodology: Eighteen size 20 MPro files were used in this study, divided into three groups of 6 files each according to irrigant used: Group I lycopene, Group II curcumin and Group III Sodium hypochlorite. All files were immersed in irrigants for either 5 or 10 minutes. The cyclic fatigue tests were performed on all files of both immersion periods using a static cyclic fatigue testing device, which have an artificial stainless steel canal and tested using a custom-made static cyclic fatigue testing apparatus. Parameters recorded were time to fracture, number of cycles to failure (NCF) and mean length of fractured segments.

Results: Statistical analysis was performed using IBM SPSS Statistics Version 2.0 for Windows. Data was presented as mean and standard deviation (SD). The significance level was set at $P \leq 0.05$. Kolmogorov-Smirnov and Shapiro-Wilk tests were used to assess data normality.

Because of the small sample size, a non-parametric test was used. Kruskal-Wallis test followed by Mann-Whitney U test was performed to compare between the different irrigants at each immersion time. Mann-Whitney U test was conducted to compare between the two immersion times within each irrigant group. Results showed no statistically significant difference between the different irrigants at the two observation periods and within the same group regarding time to fracture, number of cycles to failure (NCF) and mean length of fractured segments.

Conclusion: All tested irrigants lycopene, curcumin and Sodium hypochlorite had same effect on cyclic fatigue of the preheated machined CM wire Mpro endodontic files when used for 5 or 10 minutes.

Biography:

Hala Fayek Khalil is the Lecturer of Endodontics, Faculty of Dentistry at The British University in Egypt. He got the Doctorate Degree of Specialty (DDS) in Endodontics at Ain Shams University, Egypt. He got his Master's Degree (MD) of conservative dentistry at Ain Shams University, Egypt and Bachelor's Degree in oral and dental Medicine from Cairo University.