

## Brazilian Oral Research

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### Abstract



[SOUSA, Simone Maria Galvão](#) and [SILVA, Thelma Lopes](#). Demineralization effect of EDTA, EGTA, CDTA and citric acid on root dentin: a comparative study. *Braz. oral res.* [online]. 2005, vol.19, n.3, pp. 188-192. ISSN 1806-8324. doi: 10.1590/S1806-83242005000300006.

The purpose of this study was to biochemically compare the decalcifying effects of 1% EDTA (pH 7.4), 1% EGTA (pH 7.4), 1% CDTA (pH 7.4), 1% citric acid solutions (pH 1.0 and 7.4) and saline solution (control) on root dentin. Forty-eight single-rooted teeth were used in this study. The canals were instrumented by the step-back technique and the roots were randomly divided into six equal experimental groups (n = 8) according to the irrigating agent tested. A total of 30  $\mu$ L of each solution was pipetted into the root canal and allowed to set undisturbed for 5 minutes. After this time, 15  $\mu$ L of the solutions were removed from each canal using a Hamilton syringe and placed in a container with 5 mL of deionised water. The  $\mu$ g/mL concentration of calcium ion ( $\text{Ca}^{2+}$ ) extracted from the root canal samples was determined using inductively coupled plasma-atomic emission spectrometry (ICP-AES). Data were analysed by means of the Kruskal-Wallis and Mood's median tests. Citric acid solution at pH 1.0 removed more calcium than at pH 7.4 and than the other chelating solutions tested ( $p < 0.05$ ). No differences were observed between EDTA and EGTA. Both EDTA and EGTA removed significantly more calcium than CDTA and citric acid at pH 7.4 ( $p < 0.05$ ). There were no differences between citric acid at pH 7.4 and saline solution, which had the least efficacy for  $\text{Ca}^{2+}$  extraction ( $p > 0.05$ ). These results indicate that citric acid at pH 1.0 is a good alternative as an irrigating solution to remove the smear layer and facilitate the biomechanical procedures.

Keywords : Chelating agent; Citric acid; Edetic acid; Egtazic acid.

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