Evaluation of setting time, ions release, sealing ability and adhesion of a novel experimental endodontic cement

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Resumo:
The aim of this work was to evaluate the setting time, adhesion, sealing ability, and ion release of a novel endodontic sealer (CEOE) and of the commercial Sealer 26® cement. The setting time was determined in accordance with ANSI/ADA specifications #57. The adhesion of the materials to the canal walls was evaluated through bond strength using the push-out technique. The sealing ability was assessed by fluid filtration measurements. The released ions of interest to be analyzed are OH\(^{-}\) and Ca\(^{2+}\). The concentration of hydroxyl and calcium ions was evaluated by pH measurements and atomic absorption spectroscopy technique, respectively. The data were analyzed statistically using the analysis of variance and the Tukey’s test. The results obtained showed that the setting time of CEOE cement is 35% shorter than of Sealer 26® and both cements meet the British Standard BS (1988) recommendation. No significant difference was observed in the bonding strength and permeability values for both cements. Statistically, the CEOE released more hydroxyl ions than Sealer 26® in the first 72 h, and more calcium ions in the first 48 h.