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Abstract

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Eight nonstandardized gutta-percha points commercially available in Brazil (Konne, Tanari, Endopoint, Odous, Dentsply 0.04, Dentsply 0.06, Dentsply TP and Dentsply FM) were analysed chemically and by X-ray diffraction, and their chemical compositions were compared. The organic fraction (gutta-percha polymer and wax/resin) of the gutta-percha points was separated from the inorganic fraction (ZnO and $BaSO_4$) by dissolving them in chloroform. The gutta-percha polymer was precipitated with acetone. The inorganic fraction was analysed by elemental microanalysis. Energy-dispersive X-ray microanalysis (EDX) and X-ray diffraction were employed to identify the chemical elements and compounds (barium sulfate and zinc oxide). The barium sulfate content was calculated based on the percentage of sulfur found in the elemental microanalysis. All analyses were repeated three times. The means and standard deviations of the percentage by weight of gutta-percha in the points were: Konne (17.6 ?nbsp;0.30), Tanari (15.2 ?nbsp;0.30), Endopoint (16.7 ?nbsp;0.23), Odous (18.8 ?nbsp;0.20), Dentsply 0.04 (15.7 ?nbsp;0.17), Dentsply 0.06 (16.6 ?0.17), Dentsply TP (21.6 ?nbsp;0.15) and Dentsply FM (16.3 ?nbsp;0.23). The means and standard deviations of the zinc oxide content were: Konne (79.9 ?nbsp;0.10), Tanari (81.9 ?nbsp;0.07), Endopoint (81.3 ?nbsp;0.40), Odous (79.7 ?nbsp;0.26), Dentsply 0.04 (77.9 ?nbsp;0.03), Dentsply 0.06 (78.2 ?nbsp;0.07), Dentsply TP (69.8 ?nbsp;0.19) and Dentsply FM (72.6 ?nbsp;0.70). The method utilized was appropriate to quantify gutta-percha, wax/resin, zinc oxide and barium sulfate. Cone brands without barium sulfate were found. An unusual high wax/resin percentage was detected in Dentsply FM (p = 0.0003). Dentsply TP showed the highest gutta-percha percentage.

Keywords : Gutta-percha; Electron probe microanalysis; X-ray diffraction.

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