Detection and quantification of monomers in unstimulated whole saliva after treatment with resin-based composite fillings in vivo.

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Abstract

Resin-based dental restorative materials contain allergenic methacrylate monomers, which may be released into saliva after restorative treatment. Monomers from resin-based composite materials have been demonstrated in saliva in vitro; however, studies analyzing saliva after restorative therapy are scarce. The aim of this study was to quantify methacrylate monomers in saliva after treatment with a resin-based composite filling material. Saliva was collected from 10 patients at four start points--before treatment, and 10 min, 24 h, and 7 d after treatment--and analysed by combined chromatography/mass spectrometry. The monomers bisphenol-A diglycidyl methacrylate (Bis-GMA), 2-hydroxyethyl methacrylate (HEMA), and urethane dimethacrylate (UDMA) were detected and quantified in the samples collected shortly (10 min) after treatment. The amounts detected ranged from 0.028 to 9.65 µg ml(-1) for Bis-GMA, from 0.015 to 0.19 µg ml(-1) for HEMA, and from 0.004 to 1.2 µg ml(-1) for UDMA. Triethyleneglycol dimethacrylate (TEGDMA) was detected in four of the samples. Ethoxylated bisphenol-A dimethacrylate (Bis-EMA) was not detected. Monomers were not detected in saliva samples collected before treatment, or 24 h or 7 d after treatment, with the exception of one sample, 24 h after treatment, in which HEMA was detected. In conclusion, monomers from the investigated resin-based composite and adhesive system were present in saliva shortly after treatment. One week after treatment, no monomers could be detected in patients' saliva samples.


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