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The effect of various asthma medications on surface roughness of pediatric dental restorative materials: An atomic force microscopy and scanning electron microscopy study

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Abstract

The aim of the study is to examine and compare the effects of various inhaled asthma medications (IAMs) on the surface roughness of dental restorative materials (DRMs). In total, 192 samples were prepared including 32 samples for the each material group from six different DRMs [Nanohybrid composite (Filtek Z550), Nanofilled flowable composite (Filtek Ultimate), Compomer (Dyract XP), Conventional glass ionomer (Fuji IX Fast), Resin-modified glass ionomer (Fuji II LC), Self-adhering flowable composite (Fusio Liquid Dentin)]. Each group, were divided into four subgroups (n = 8)

according to four different IAMs. Surface roughness values (Ra) were obtained by atomic force microscopy (AFM). After the initial roughness of DRMs was analyzed by using AFM and scanning electron microscopy (SEM), each samples were exposed to the same IAMs for 21 days and all analysis were repeated on the 7th and 21st day. Ras increased in all DRMs and higher Ras were recorded through the long-term IAMs administrations. For all IAMs, Fuji II LC had the highest Ra and Filtek Z550 had the lowest Ra. The combined IAM created the highest roughness change on the 7th and 21st day compared to other IAMs. As a result, in in vitro conditions IAMs significantly increased the surface roughness of DRMs. © 2020 Wiley Periodicals LLC.

Author keywords

AFM; asthma medication; dental restorative materials; SEM; surface roughness

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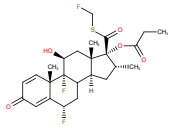
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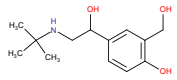
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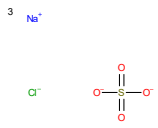
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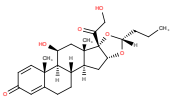
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