COMMENTARY

Effects of Various Beverages on Hardness, Roughness, and Solubility of Esthetic Restorative Materials

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Recent years have seen a significant rise in the consumption of soft drinks and chemically processed fruit juices. These beverages usually have a great amount of sugar and low pH. The acidic beverages are detrimental not only to the tooth structure but also to the restorative dental materials. Restoratives are constantly being exposed to chemical agents in the oral environment, such as acidic beverages, and these agents may affect their physical properties.

The article by Hamouda evaluated the effect of beverages with different acidity on some physical properties of tooth-colored direct restorative materials. Mirinda orange (Pepsi, Cairo, Egypt) was chosen to represent soft drinks in general. It has a low pH of 2.85, which is similar to other soft drinks such as Pepsi. Mango juice was selected as an intermediate acidic beverage, with a pH of 3.49, similar to other fruit juices. Cow's milk was used because of its neutral pH of 6.34 and water was chosen as the control with pH of 6.98. Microhardness, surface roughness, and solubility of a conventional glass ionomer, a resin-modified glass ionomer, a compomer, and a resin composite were evaluated.

Overall the low pH beverages decreased the microhardness and increased the surface roughness of all materials. Moreover, the lower pH beverage negatively affected the dental materials' properties at a greater extent than the intermediate pH beverage. The conventional glass ionomer was the most affected material and the composite was the least affected. Interestingly, the cow's milk increased the surface roughness of the glass ionomer as much as the mango juice; however, the author did not attempt to explain this finding. Hence, the surface roughness of the materials was greater when immersed in milk than in water. The author attributed this finding to the lower pH in the cow's milk. However, the pH of water and milk are similar. In the study, the specimens were immersed in the beverages for 3 hours per day for 7 days. Although these findings give some insight for the possible behavior of these restoratives when exposed to these beverages in the oral cavity, one needs to be cautious when interpreting the results of an in vitro study. In the oral cavity the restorations would not be covered by these liquids for hours and the presence of saliva would also cleanse the teeth and the restorative materials in the mouth.

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