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Raisin Effects on *in vitro* Demineralization of Human Teeth

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Demineralization of tooth enamel involves a sensitive balance of several factors, including oral bacteria, dietary components, salivary flow and clearance. Previous studies using rats inoculated with oral bacteria have indicated a high cariogenic potential for raisins. The bacterial action is believed to be an etiological agent of human dental caries. **Objective:** To evaluate the cariogenic potential of raisins with respect to the factors listed above, this study utilized an *in vitro* model to determine the affect of raisins upon the demineralization of human enamel by intraoral bacteria under a continuous flow of saliva-like solution (SLS). **Methods:** The crowns of extracted caries-free human molars were sliced laterally to produce 180 μ m thick sections of buccal or lingual enamel. The enamel slices were embedded in epoxy, then sanded to expose a 300 μ m treatment window on the edge. The epoxy samples were incubated (37°C) in an inoculum of streptococcus mutans for 2h to allow bacterial attachment onto the exposed enamel. For 7d, the control group was treated with SLS, and the experimental group with SLS plus two 15-min exposures/day of 10% (w/w) raisin juice. Microradiographs of each sample were evaluated prior to, during, and following treatments for change in lesion depth plus surface loss at 80% mineral density (Δ_{80}). **Results:** At 3d, the raisin samples showed a Δ_{80} of 5.7 \pm 4.1 μ m, relative to 1.1 \pm 3.5 μ m in the SLS. After 7d, the raisin samples showed a Δ_{80} of 11.2 \pm 4.7 μ m, relative to 3.6 \pm 3.8 μ m in the SLS (p<0.06, n=6, t-test). **Conclusion:** Although not statistically significant, the 7d results indicate that 10% raisin juice may stimulate intraoral bacteria to demineralize human teeth despite the neutralizing capabilities of salivary flow. More study is needed to determine the relative intensity of the cariogenic attack compared to other common food stuffs. Support: California Raisin Marketing Board, Great West [Life Insurance](#), ADAF, and NIST.

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