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THE IMPACT OF ALOE VERA GEL ON REMINERALIZATION OF THE TOOTH AND ITS EFFECT AGAINST ENTEROCOCCUS FAECALIS: AN IN VITRO STUDY

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Abstract.

Background: The Aloe vera plant is a cactus-like plant in the Liliacea family that has been known and utilized for its medical benefits. It has been attempted to be used as a remineralizing agent and shows an antibacterial effect.

Aim of the study: Assessment of the remineralizing effect of solution of saturated Aloe vera gel compared to distal water by microhardness Vickers test and Densometric X-Ray Analysis and effect of Aloe vera gel against *Enterococcus faecalis*.

Materials and methods: 10 extracted permanent molars were used in this in vitro study. each tooth enrolls in Teflon tape and only the enamel of the occlusal surface was exposed to a demineralizing solution (acid etch) for 45 seconds in-vitro and randomly assigned to two groups: Group 1 was treated with distal water; group 2 was treated with Aloe vera gel. All groups except the control baseline group were treated with their respective remineralizing solution for 10 days. Vicker's Microhardness Number (VHN) and Densometric X-Ray Analysis were carried out at baseline, post-demineralization and later post 10 days of remineralization. The antibacterial effect of Aloe vera gel was assessed by the disc diffusion method. The filter paper was immersed in 20µl of different concentrations of Aloe vera gel extract as fresh Aloe vera (100 %) and (50 % and 25 %) diluted with de-ionized water after that the disc was distributed in a plate containing the *E. faecalis*. Antibiotics disc of Augmentin (Amoxicillin and Clavulanic acid 30ug) were also poured in the same plate and incubated at 37°C for 24 hours and the zone of inhibition of antibiotic was measured for comparison with a zone of inhibition of filter paper saturated with Aloe vera gel.

Results: Densitometric X-Ray Analysis and Microhardness Number (VHN) evaluation showed improvement in the enamel density and the surface hardness after remineralization. The mean value in the group treated with Aloe vera solution was higher than the recorded mean value for the group treated with distal water. There was a significant difference between Aloe vera solution and distal water. Significant (p-value≤0.05) after 10 days. The antibacterial effect showed that *E. faecalis* was resistant to Aloe vera gel in different concentrations compared with Augmentin (Amoxicillin and Clavulanic acid 30ug).

Conclusion: Aloe vera gel could be used for caries prevention in terms of safety and efficiency. While *E. faecalis* show resistance activity against Aloe vera gel.