

EFFECT OF FLUORIDE VARNISH ON SURFACE MICROHARDNESS OF WHITE SPOT LESIONS ON PRIMARY TEETH

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Abstract. The aim of this study was to compare the changes in surface microhardness (SMH) of white spot lesions (WSL) on primary teeth between those treated with three applications in one week of 5% sodium fluoride with amorphous calcium phosphate (ACP) and those treated with single application of the same sodium fluoride with ACP varnish. Thirty extracted sound primary anterior teeth were divided randomly into 3 groups: group 1: control group (no treatment); group 2: treated with a single application of fluoride varnish in one week; and group 3: treated with a three applications of fluoride varnish in one week. WSL were induced in all teeth by immersing them in demineralizing solution, then undergoing seven days of pH-cycling. Group 2 was treated with a single application of fluoride varnish on day 1 and group 3 was treated with three applications in one week on days 1, 3 and 5. The Vicker's microhardness number (VHN) was measured at baseline, after inducing the WSL and after pH-cycling. The percent change in surface microhardness (% SMH change) was calculated. The one-way ANOVA and Tukey's tests were used with 95% confidence levels to compare differences. The mean surface microhardness levels after WSL were formed were significantly lower than baseline in all groups. The mean surface microhardness levels after pH-cycling in groups 2 and 3 were significantly greater than their mean values after inducing WSL. There was no significant difference between the mean % SMH change values for groups 2 and 3. However, the mean surface microhardness of both the treatment groups were significantly higher than the mean surface microhardness of the control teeth after the treatment groups had applied the tooth varnish. We conclude under the study conditions, applying 5% NaF varnish with ACP three applications in one week resulted in no significant difference in the surface microhardness of WSL on primary teeth than a single application, suggesting a single application may be adequate. *In vivo* studies are needed to confirm these findings.

Keywords: fluoride varnish, primary teeth, surface microhardness, white spot lesion

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