EFFECT OF LOW FLUORIDE CONCENTRATION MOUTHRINSE ON DEMINERALIZED PRIMARY ENAMEL

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Abstract. Fluoride mouthrinse has been used to manage dental caries. Fluoride mouthrinse has often been used at a fluoride concentration of 0.05% sodium fluoride (NaF) solution [225 ppm fluoride (F)] rinse once a day but a lower concentration of fluoride mouthrinse is also available with a concentration of 0.02% NaF (100 ppm F) used twice daily. However, they have no published *in vitro* studies evaluating the remineralization effect of 0.02% NaF mouthrinse on primary teeth in Thailand. Therefore, we aimed to compare the remineralizing efficacy between 0.05% NaF and 0.02% NaF mouthrinse in order to determine if the remineralizing efficacy is the same between the 2 concentrations in order to guide dentist recommendations for fluoride rinses in children. We conducted this *in vitro* study on 36 sound primary incisors. We divided the teeth into 3 study groups: Group A teeth were treated with deionized water, Group B teeth were treated with 0.02% NaF mouthrinse and Group C teeth were treated with 0.05% NaF mouthrinse. We created demineralized lesions in all study teeth by immersing them all in a demineralizing solution at a pH of 4.4 at temperature of 37ºC for 96 hours. Each group of teeth were then immersed in their respective study solution for 1 minute 3 times a day for 1 week and to imitate the oral environment all the study teeth were placed in demineralizing solution for 3 hours twice daily and the rest of the time the teeth were placed in remineralizing solution for 1 week. Each tooth was then examined with polarized light microscopy and the lesion depth was measured for each tooth and the 3 groups were compared using Image-Pro Plus software. Data were analyzed using Paired-*t*, one-way ANOVA and Tukey's multiple comparison tests at a 95% level of confidence. After a 7-day cycle, mean lesion depths in all groups had increased significantly ($p<0.05$). Group A (control group) was significantly different from the other groups (B, C) ($p<0.05$). No significant differences were found between Groups B and C ($p=0.286$). We conclude the 0.02% NaF and 0.05% NaF moutrinses in this study were equal in their deceleration of enamel primary caries progression.

Keywords: fluoride mouthrinse, low concentration, polarized light microscopy, primary enamel

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