

The Effect of milk or its combination with tea and 0.2% NaF on dental enamel demineralization analyzed by micro computed tomography

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Abstrak

Efek susu, kombinasinya dengan teh, dan NaF 0,2% terhadap demineralisasi email gigi: analisis microcomputed tomography. Fluor dan kalsium berperan penting dalam pencegahan karies gigi, karena dapat menghambat demineralisasi dan meningkatkan remineralisasi Tujuan: Menganalisis efek dari susu sendiri dan kombinasi dengan teh, dan NaF 0,2% pada demineralisasi email gigi menggunakan micro-computed tomography (micro-CT). Metode: Pada bagian koronal 40 gigi premolar manusia yang telah diekstraksi, dibuatkan region of interest. Permukaan oklusal tiap gigi tersebut ditutupi stiker 3x5 mm² dan semua permukaan lainnya ditutupi dengan pernis tahan asam. Gigi-gigi yang telah dipersiapkan ini secara acak dan dialokasikan ke dalam empat kelompok yang direndam dalam larutan remineralisasi selama 26 menit, yakni: Grup A, susu; Grup B, susu dan teh; Grup C, susu dan NaF 0,2%; dan Grup D, deionized air (kontrol). Hasil: Setelah 3 hari perendaman dalam larutan buffer pada pH 4,4, dilakukan pemindaian dengan micro-CT. Nilai rata-rata grayscale dan standar deviasi secara berurutan: 98,1 ± 24,0; 90,8 ± 9,1; 92,6 ± 21,4; 81,1 ± 20,3. Nilai rata-rata grayscale yang berbeda bermakna secara signifikan antara empat kelompok tersebut (p<0,05), kecuali antara kelompok A dan B dan antara kelompok A dan C. Simpulan: Topikal aplikasi dengan susu saja menunjukkan efek perlindungan yang lebih tinggi terhadap demineralisasi dibandingkan dengan aplikasi sinergis susu dengan teh dan, susu dengan, 0,2% NaF.

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Fluoride and calcium play an important role in the prevention of dental caries, promoting the inhibition of demineralization and the increase of remineralization. Objective: To investigate the effects of milk with/without the combination of tea and 0.2% NaF on enamel demineralization using micro-computed tomography (microCT). Methods: The coronal parts of 40 extracted sound premolars were prepared as tooth blocks. An unvarnished occlusal surface window was created for each tooth by covering the occlusal surface with a 3x5 mm² sticker and painting all other surfaces with an acid-resistant varnish. These blocks were randomly allocated into four groups that were immersed in remineralizing solutions for 26 minutes: Group A, milk; Group B, milk and tea; Group C, milk and 0.2% NaF; and Group D, deionized water (control). Results: After 3 days of immersion in a buffered demineralization solution at pH 4.4, micro-CT scans were taken. The mean grayscale values and the standard deviations are: 98.1 ± 24.0; 90.8 ± 9.1; 92.6 ± 21.4; 81.1 ± 20.3, respectively. The mean grayscale values were significantly different among the four groups (p<0.05), except between groups A and B and between groups A and C. Conclusion: Topical application with milk alone showed a higher protective effect against demineralization compared to the synergic application of milk and tea and milk and 0.2% NaF.