

INTISARI

Email yang merupakan bagian paling luar gigi tersusun atas kristal hidroksiapatit sebagai penyusun utama. Proses demineralisasi pada email menyebabkan terbentuknya pori-pori pada jaringan keras. Pori-pori ini dapat diperbaiki dengan mengembalikan mineral-mineral yang telah hilang melalui proses remineralisasi. Cangkang telur ayam sebagai sumber kalsium tinggi berpotensi menjadi agen remineralisasi. Tujuan penelitian ini adalah untuk mengetahui pengaruh pasta cangkang telur ayam negeri terkalsinasi terhadap kadar kalsium pada proses remineralisasi.

Penelitian eksperimental laboratoris ini dilakukan pada 12 sampel dari gigi premolar dengan kelompok uji CPP-ACP (kontrol positif), pasta cangkang telur ayam negeri terkalsinasi (kelompok perlakuan), dan saliva buatan (kontrol negatif). Pembuatan model demineralisasi dilakukan dengan aplikasi asam fosfat 37% selama 60 detik. Pasta cangkang terkalsinasi dibuat dengan mencampurkan 10 gram serbuk cangkang telur ayam dan 90 gram gliserin sehingga terbentuk konsentrasi 10%. Pasta ini diaplikasikan pada gigi yang telah didemineralisasi selama 30 menit, dicuci dengan akuades, disikat, kemudian direndam pada saliva buatan dalam periode 14 hari berturut-turut. Pengamatan kadar kalsium dilakukan menggunakan *scanning electron microscopy/energy dispersive X-ray spectroscopy*. Data kemudian diuji *One-Way ANOVA* dilanjutkan dengan uji *Least Significant Difference* (LSD).

Hasil uji *One-Way ANOVA* menunjukkan adanya perbedaan signifikan pada kadar kalsium antarkelompok. Hasil LSD menunjukkan bahwa terdapat perbedaan rerata kadar kalsium yang signifikan antara kelompok perlakuan dan kontrol negatif. Namun, tidak terdapat perbedaan signifikan antara kelompok perlakuan dan kontrol positif. Kesimpulan dari penelitian ini adalah pasta cangkang telur ayam negeri terkalsinasi dengan konsentrasi 10% dapat meningkatkan kadar kalsium pada proses remineralisasi, efektivitas pasta ini sama dengan CPP-ACP.

Kata kunci: Kadar kalsium, pasta cangkang telur ayam, email, hidroksiapatit

ABSTRACT

The outermost layer of the tooth is called enamel, which is made up of hydroxyapatite crystals as the main compiler. Demineralization of enamel leads to the formation of pores in the hard tissue. These pores can be fixed by restoring the lost minerals through remineralization. Chicken eggshells are a great source of high calcium and can be used as a remineralization agent. The purpose of this study was to determine the impact of calcined domestic chicken eggshell paste on calcium levels in the remineralization process.

The research was carried out on 12 samples from premolars with CPP-ACP test group (positive control), the calcined domestic chicken eggshell paste group (treatment group), and the artificial saliva group (negative control). The demineralization model was made by application of 37% phosphoric acid for 60 seconds. The calcined eggshell paste was made by mixing 10 grams of chicken eggshell powder and 90 grams of glycerin to form a concentration of 10%. The paste was applied to teeth that have been demineralized for 30 minutes, washed with distilled water, brushed, then soaked in artificial saliva for 14 consecutive days. The calcium levels was observed using scanning electron microscopy/energy dispersive X-ray spectroscopy. The data was analyzed using the One-Way ANOVA test followed by the Least Significant Difference (LSD) test.

The results of the One-Way ANOVA test showed significant differences in calcium levels between the groups. The LSD test showed that there was a significant difference in mean calcium levels between the treatment group and the negative control. However, no significant difference existed between the treatment group and the positive control. In conclusion, calcined domestic chicken eggshell paste increase the calcium levels within 10% concentration in the remineralization process, and its effectiveness is the same as CPP-ACP.

Keywords: Calcium content, chicken eggshell paste, enamel, hydroxyapatite