

INTISARI

White spot merupakan tampakan klinis awal pada gigi yang mengalami karies akibat demineralisasi. Demineralisasi merupakan terlarutnya hidroksiapatit gigi. Remineralisasi dapat mengembalikan mineral gigi yang hilang akibat demineralisasi. Remineralisasi terjadi ketika ion kalsium dan fosfat terdeposisi ke permukaan gigi menjadi hidroksiapatit. Tulang ayam memiliki kandungan hidroksiapatit yang berpotensi digunakan sebagai bahan remineralisasi. Penelitian ini bertujuan untuk mengetahui pengaruh aplikasi pasta hidroksiapatit dari ekstrak tulang ayam terhadap kadar fosfat gigi dengan lesi *white spot*.

Penelitian ini menggunakan 8 gigi premolar bebas karies sebagai sampel. Setiap gigi dibelah menjadi 2 bagian. Lesi *white spot* diinduksi dengan aplikasi asam fosfat 37% selama 60 detik pada permukaan servikal gigi bagian proksimal, dibatasi area berdiameter 5 mm. Sampel dibagi menjadi 2 kelompok: kelompok perlakuan dan kelompok kontrol positif. Pada kelompok perlakuan, hidroksiapatit diaplikasikan ke *white spot*, sedangkan *Casein Phosphopeptide-Amorphous Calcium Phosphate* (CPP-ACP) diaplikasikan ke *white spot* pada kelompok kontrol positif. *White spot* tidak diberi perlakuan pada kontrol negatif di tiap kelompok. Aplikasi dilakukan dua kali sehari selama 6 hari berturut-turut. Sampel disimpan dalam saliva buatan dan diganti setiap 24 jam. Kadar fosfat diukur dengan Spektrofotometer UV-Vis. Data dianalisis dengan *independent sample t-test*.

Hasil *Independent sample t-test* menunjukkan perbedaan yang signifikan antara kadar fosfat gigi pada kelompok yang dipapar hidroksiapatit dengan kelompok kontrol negatifnya ($p < 0,05$), sedangkan hasil uji menunjukkan tidak terdapat perbedaan kadar fosfat yang signifikan antara kelompok yang dipapar CPP-ACP dengan kelompok kontrol negatifnya ($p > 0,05$). Uji yang sama pada kenaikan kadar fosfat gigi antara kelompok hidroksiapatit dengan kelompok CPP-ACP tidak menunjukkan perbedaan yang signifikan ($p > 0,05$).

Kesimpulan penelitian ini adalah aplikasi pasta hidroksiapatit tulang ayam dapat meningkatkan kadar fosfat pada gigi dengan lesi *white spot*.

Kata kunci: tulang ayam, *white spot*, remineralisasi, fosfat gigi

ABSTRACT

White spot is an early clinical sign of tooth caries lesion due to demineralization. Demineralization is dissolution of tooth hydroxyapatite. Remineralization could replace the minerals that were loss because of demineralization. Remineralization occurs when calcium and phosphate ions are deposited onto tooth surface forming hydroxyapatite. Chicken bone contains hydroxyapatite that may be used as remineralization agent. The aim of this study was to determine the effect of chicken bone-derived hydroxyapatite paste on phosphate levels of human tooth with white spot lesion.

This study used eight caries-free premolar teeth as samples. The teeth were cut into 2 parts. White spot lesions were induced by application of 37% phosphoric acid etch for 60 seconds on the proximal side of the tooth cervical surface, confined to a 5 mm diameter. The samples were divided into two groups: the treatment group and the positive control group. In the treatment group, hydroxyapatite was applied onto the white spots, while Casein Phosphopeptide-Amorphous Calcium Phosphate (CPP-ACP) was applied onto the white spots in the positive control group. The white spots were left untreated in the negative control of each group. The applications were done twice a day for 6 consecutive days. Samples were stored in artificial saliva and replaced every 24 hours. Phosphate levels were measured using UV-Vis spectrophotometer. Data were analyzed using independent sample t-test.

The independent sample t-test results showed significant difference of phosphate levels between hydroxyapatite-exposed group and it's negative control group ($p < 0.05$), meanwhile the test showed no significant difference of phosphate levels between CPP-ACP-exposed group and it's negative control group ($p > 0.05$). The same test on phosphate levels increment between hydroxyapatite group and CPP-ACP group showed no significant difference ($p > 0.05$). Thus, the application of hydroxyapatite has an equivalent ability to CPP-ACP in increasing tooth phosphate levels.

In conclusion, the effect of chicken bone-derived hydroxyapatite paste increased the phosphate levels of human tooth with white spot lesion.

keyword: chicken bone, white spot, remineralization, tooth phosphate levels