

INTISARI

PENGARUH VARIASI APLIKASI *DESENSITIZING AGENT* YANG MENGANDUNG FLUOR TERHADAP JUMLAH SEL MAKROFAG PADA GIGI PASCA *BLEACHING* EKSTRAKORONAL DENGAN HIDROGEN PEROKSIDA 40% (Kajian *In vivo* pada Tikus Wistar)

Bahan aktif hidrogen peroksida mampu menembus *interprismatic space* email dan tubulus dentin lalu mengiritasi pulpa. Iritan berupa *reactive oxygen species* (ROS) akan menimbulkan stres oksidatif pada sel pulpa sehingga menyebabkan terjadinya reaksi inflamasi dan meningkatkan jumlah sel makrofag didalam pulpa. *Casein Phosphopeptide - Amorphous Calcium Fluoride Phosphate* (CPP-ACFP) merupakan *desensitizing agent* yang mampu remineralisasi tubulus dentinalis dan menghasilkan penutupan sebagian tubuli yang terbuka akibat dari proses *bleaching*. Cara aplikasi CPP-ACFP dapat mempengaruhi kemampuan protektifnya. Penelitian ini bertujuan untuk mengetahui pengaruh variasi aplikasi CPP-ACFP terhadap jumlah sel makrofag pada pulpa gigi pasca *bleaching* ekstrakoronal dengan hidrogen peroksida 40%.

Penelitian dilakukan pada 28 gigi molar rahang atas tikus Wistar yang terbagi menjadi 4 kelompok. Kelompok Kontrol hanya dilakukan *bleaching* saja, Kelompok I diberi aplikasi CPP-ACFP sebelum *bleaching*, Kelompok II diberi aplikasi CPP-ACFP sesudah *bleaching*, dan Kelompok III diberi aplikasi CPP-ACFP pada saat sebelum dan sesudah prosedur *bleaching*. Spesimen gigi molar diambil pada hari kelima, dan dibuat preparat histologis dengan pewarnaan Hematoxylin Eosin (HE). Penghitungan jumlah sel makrofag dilakukan pada 3 lapang pandang di area pulpa koronal dengan mikroskop cahaya perbesaran 1000x.

Hasil uji ANAVA satu jalur menunjukkan adanya pengaruh variasi aplikasi desensitizing agent mengandung fluor (CPP-ACFP) terhadap jumlah sel makrofag pada Kelompok Kontrol dan Kelompok I, II, dan III dengan perbedaaan yang bermakna ($p < 0,05$). Uji *post hoc* LSD menunjukkan terdapat perbedaan rerata yang bermakna pada semua pasangan kelompok yang dibandingkan. Kesimpulan dari penelitian ini adalah aplikasi CPP-ACFP yang diberikan sebelum dan sesudah *bleaching* akan menyebabkan jumlah sel makrofag yang lebih rendah daripada aplikasi CPP-ACFP yang hanya diberikan sebelum atau sesudah *bleaching* ekstrakoronal dengan hidrogen peroksida 40%.

Kata kunci : *desensitizing agent*, CPP-ACFP, makrofag, *bleaching* ekstrakoronal

ABSTRACT

THE APPLICATION OF FLUORIDE CONTAINING DESENSITIZING AGENT AT DIFFERENT MOMENTS AND IT'S EFFECT ON THE NUMBER OF MACROPHAGE AT DENTAL PULP RELATED TO EXTRACORONAL BLEACHING WITH 40% HYDROGEN PEROXIDE (In vivo Studies of Wistar Rats)

The active ingredient hydrogen peroxide is able to penetrate the interprismatic space of enamel and dentinal tubules and then irritate the pulp. Irritants in the form of reactive oxygen species (ROS) will cause oxidative stress to the pulp cells, causing an inflammatory reaction and increasing the number of macrophage cells in the pulp. Casein Phosphopeptide - Amorphous Calcium Fluoride Phosphate (CPP-ACFP) is a desensitizing agent capable of remineralizing the dentinal tubules and resulting in partial closure of the open tubules as a result of the bleaching process. The manner in which the CPP-ACFP is applied can affect its protective capabilities. This study aims to determine the effect of variations in the application of CPP-ACFP on the number of macrophage cells in dental pulp after extracoronal bleaching with 40% hydrogen peroxide.

The study was conducted on 28 maxillary molars of Wistar rats which were divided into 4 groups. Control Group was only given bleaching, Group I was given CPP-ACFP application before bleaching, Group II was given CPP-ACFP application after bleaching, and Group III was given CPP-ACFP application before and after the bleaching procedure. Molar specimens were taken on the fifth day, and made histological preparations stained with Hematoxylin Eosin (HE). The count of macrophage cells was carried out in 3 visual fields in the coronal pulp area using a 1000x magnification light microscope.

The results of the one-way ANOVA test showed the effect of variations in the application of desensitizing agent containing fluoride (CPP-ACFP) on the number of macrophage cells in the Control Group and Groups I, II, and III with significant differences ($p < 0.05$). LSD post hoc test showed that there was a significant difference in the mean between all pairs of groups being compared. The conclusion of this study is that the application of CPP-ACFP which was given before and after bleaching would cause a lower number of macrophage cells than the application of CPP-ACFP which was only given before or after extracoronal bleaching with 40% hydrogen peroxide.

Keywords : desensitizing agent, CPP-ACFP, macrophage, extracoronal bleaching