

ABSTRAK

PENGARUH PENAMBAHAN NANOSELULOSA KULIT DURIAN (*Durio zibethinus Murr.*) TERHADAP JUMLAH PELEPASAN FLUORIDA GLASS IONOMER CEMENT TIPE II

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Glass ionomer cement (GIC) merupakan material restorasi yang umum digunakan. Penggunaan GIC memiliki kelebihan berupa kemampuan pelepasan ion fluorida, namun GIC juga memiliki kekurangan. Usaha untuk mengatasi kekurangan GIC salah satunya adalah dengan penambahan *filler* berupa nanoselulosa kulit durian (*Durio zibethinus Murr.*). Tujuan penelitian ini untuk mengetahui pengaruh penambahan nanoselulosa kulit durian terhadap kemampuan pelepasan fluorida pada GIC tipe II. Jenis penelitian ini adalah eksperimental laboratoris dengan rancangan penelitian berupa *post-test only control group design*. Nanoselulosa kulit durian diisolasi menggunakan metode hidrolisis asam, kemudian dilakukan uji karakterisasi TEM, FTIR. Bentuk partikel nanoselulosa adalah *whiskers* dengan rerata panjang 87.32 nm dan rerata diameter 6.66 nm. Tiga puluh dua sampel dibagi dalam 4 kelompok, yaitu GIC konvensional dengan penambahan nanoselulosa kulit durian konsentrasi 0,5%, 1%, 1,5%, dan tanpa penambahan nanoselulosa sekam kulit durian. Sampel direndam dalam saliva buatan dan di uji menggunakan metode spektrofotometri. Analisis data menggunakan *One-Way ANOVA* diikuti dengan uji *post-hoc* LSD. Hasil analisis statistik menunjukkan rerata kadar pelepasan fluorida paling tinggi terdapat pada kelompok GIC dengan penambahan nanoselulosa kulit durian konsentrasi 1,5% yaitu 13.67 ± 0.12 ppm dan yang paling rendah terdapat pada kelompok kontrol sebesar 10.03 ± 0.09 ppm. Simpulan dari penelitian ini adalah terdapat pengaruh penambahan nanoselulosa kulit durian (*Durio zibethinus Murr.*) terhadap jumlah pelepasan ion fluorida pada GIC tipe II.

Kata kunci: *Glass ionomer cement*, pelepasan ion fluorida, nanoselulosa

ABSTRACT

THE EFFECT OF DURIAN SKIN FIBER NANOCELLULOSE (*Durio zibethinus* Murr.) ADDITION ON THE FLUORIDE RELEASE OF GLASS IONOMER CEMENT TYPE II

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*Glass ionomer cement (GIC) is a commonly used restoration material. The GIC has advantages in the form of the ability to release fluoride ions, but GIC also has disadvantages. One of the efforts to overcome the shortage of GIC by adding filler form of nanocellulose from durian peel (*Durio zibethinus* Murr.). The purpose of this study was to determine the effect of adding durian peel nanocellulose on the fluoride release ability of type II GIC. This type of research is an experimental laboratory with a research design in the form of a post-test only control group design. Durian peel nanocellulose was isolated using the acid hydrolysis method, then TEM and FTIR characterization tests were carried out. The shape of the nanocellulose is a nanowhisker with an average length of 87.32 nm and an average diameter of 6.66 nm. Thirty-two samples were divided into 4 groups, namely conventional GIC with the addition of durian peel nanocellulose at concentrations of 0.5%, 1%, 1.5%, and without the addition of durian peel nanocellulose. Samples were soaked in artificial saliva and tested using the spectrophotometric method. Data analysis used One-Way ANOVA followed by LSD post-hoc test. The results of statistical analysis showed that the highest mean fluoride content was found in the GIC group with the addition of 1.5% durian peel nanocellulose, namely 13.67 ± 0.12 ppm and the lowest was in the control group, which was 10.03 ± 0.09 ppm. The conclusion of this study is there is an effect of the addition of nanocellulose from durian peel (*Durio zibethinus* Murr.) on the concentration of fluoride ion in GIC type II.*

Keywords: *Glass ionomer cement, fluoride release, nanocellulose*