

## ABSTRAK

### **PENGARUH PEMBERIAN GLASS IONOMER CEMENT YANG DIKOMBINASIKAN NANOSULULOSA KULIT DURIAN BAWOR (*Durio zibethinus* Murr.) KONSENTRASI 0,5%, 1%, DAN 1,5% TERHADAP VIABILITAS FIBROBLAS**

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*Glass ionomer cement* (GIC) merupakan bahan restorasi yang sering digunakan. GIC memiliki kelemahan seperti mudah larut dan rentan terhadap fraktur. Salah satu inovasi yang dilakukan untuk menutupi kekurangan tersebut dengan penambahan nanosululosa kulit durian yang terbukti dapat meningkatkan sifat GIC. Namun efek toksisitas GIC yang dikombinasikan nanosululosa kulit durian terhadap gingiva belum diteliti lebih lanjut. Toksisitas GIC kombinasi nanosululosa kulit durian dapat diketahui dengan uji viabilitas fibroblas. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian *glass ionomer cement* yang dikombinasikan nanosululosa kulit durian bawor (*Durio zibethinus* Murr.) konsentrasi 0,5%, 1%, dan 1,5% terhadap viabilitas fibroblas. Jenis penelitian ini berupa penelitian eksperimental laboratoris *in vitro* dengan rancangan *post-test only control group design*. Sampel berupa hasil kultur fibroblas BHK-21 dalam *microplate well* 96 yang dibagi menjadi 4 kelompok. Kelompok perlakuan pemberian elusi GIC nanosululosa kulit durian konsentrasi 0,5%, 1%, dan 1,5% terhadap kultur fibroblas dan kontrol negatif berupa perlakuan pemberian elusi GIC tanpa nanosululosa kulit durian. Uji karakterisasi nanosululosa menggunakan *Particle Size Analyser* dan nilai viabilitas diperoleh dengan uji MTT Assay kemudian dibaca dengan *microplate reader*. Data dianalisis dengan uji *One Way ANOVA* diikuti dengan uji *Post Hoc LSD*. Hasil uji karakterisasi menunjukkan nanosululosa kulit durian memiliki rata-rata 50,79 nm dengan rata-rata nilai zeta potensial sebesar -29,23 mV. Persentase viabilitas sel terendah bernilai 68, 69% pada kelompok paparan elusi GIC nanosululosa kulit durian konsentrasi 1,5% terhadap fibroblas dan viabilitas tertinggi bernilai 86,82% pada kelompok paparan elusi GIC nanosululosa kulit durian konsentrasi 0,5% terhadap fibroblas. Kesimpulan dari penelitian ini adalah terdapat pengaruh pemberian *glass ionomer cement* yang dikombinasikan nanosululosa kulit durian bawor (*Durio zibethinus* Murr.) konsentrasi 0,5%, 1%, dan 1,5% terhadap viabilitas fibroblas.

**Kata kunci :** *Glass ionomer cement*, Kulit durian, Nanosululosa, Viabilitas fibroblas

**ABSTRACT**  
**EFFECT OF GLASS IONOMER CEMENT COMBINED WITH DURIAN**  
**BAWOR RIND NANOCELLULOSE (*Durio Zibethinus* Murr.) AT**  
**CONCENTRATIONS OF 0,5%, 1%, AND 1,5%**  
**ON FIBROBLAST VIABILITY**

Riyan Riski Raharja

*Glass Ionomer Cement (GIC) is a commonly used as restorative material. Weakness of GIC such as susceptibility to dissolution and fracture. The innovation to overcome these limitations is the addition of durian skin nanocellulose as GIC filler, which has been shown to enhance GIC's mechanical properties. However the toxicity effect of GIC combined with durian skin nanocellulose on the gingiva has not been studied further. The toxicity of GIC combined with durian skin nanocellulose can be determined by fibroblast viability testing. This study aims to determine the effect of glass ionomer cement combined with durian bawor skin nanocellulose (*Durio zibethinus* Murr.) at concentrations of 0,5%, 1%, and 1,5% on fibroblast viability. This study is an in vitro laboratory experiment using a post-test only control group design. The samples consisted of BHK-21 fibroblast culture in 96-well microplates, divide into four groups. Treatment group with 0,5%, 1%, and 1,5% durian skin nanocellulose GIC eluate expose to fibroblast culture, and negative control group exposed to GIC eluate without durian skin nanocellulose. Nanocellulose characterization was determined using Particle Size Analyzer and cell viability was measured using MTT Assay then read by microplate reader. Data were analyzed using One-Way ANOVA followed by the Post Hoc LSD test. Characterization result showed that the average size of durian skin nanocellulose was 50,79 nm with an average of zeta potential is -29,23 mV. The lowest cell viability percentage was 68.69% in 1,5% durian skin nanocellulose GIC eluate group while the highest was 86,82% in 0,5% durian skin nanocellulose GIC eluate group. The study concludes that there is an effect of glass ionomer cement combined with durian bawor skin nanocellulose (*Durio zibethinus* Murr.) at concentrations of 0,5%, 1% and 1,5% on fibroblast viability.*

**Keywords:** *Durian's skin, Fibroblast viability, Glass ionomer cement, Nanocellulose*