

INTISARI

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**PENGARUH PENAMBAHAN NANOSELULOSA SERAT KULIT DURIAN (*Durio zibethinus* Murr.) TERHADAP KEKUATAN KOMPRESI GLASS IONOMER CEMENT KONVENSIONAL**

**Latar belakang :** *Glass ionomer cement* merupakan bahan restorasi yang sering digunakan karena sifatnya yang mampu melepaskan *fluor* sehingga dapat mencegah karies lebih lanjut. Bahan *glass ionomer cement* memerlukan bahan penguat untuk meningkatkan kekuatan kompresinya dengan menambahkan nanoselulosa serat kulit durian (*Durio zibethinus* Murr.). **Tujuan :** Mengetahui pengaruh penambahan nanoselulosa serat kulit durian (*Durio zibethinus* Murr.) terhadap kekuatan kompresi *glass ionomer cement* konvensional. **Metode :** Jenis penelitian ini adalah eksperimental laboratoris dengan rancangan penelitian berupa *posttest-only control group design*. Sebanyak 36 sampel didistribusikan menjadi 4 kelompok, yaitu *glass ionomer cement* konvensional yang ditambahkan nanoselulosa serat kulit durian (*Durio zibethinus* Murr.) dengan konsentrasi 0,5%, 1%, 1,5%, dan tanpa penambahan nanoselulosa. Sebanyak 0,5 ml nanoselulosa dilakukan uji TEM guna melihat bentuk dan ukuran partikel. Sampel dilakukan uji SEM dengan pengambilan sampel secara *simple random sampling*. Sampel kemudian dilakukan uji kekuatan kompresi menggunakan *Universal Testing Machine* (UTM). Analisis data menggunakan *One-Way ANOVA* diikuti dengan uji LSD. **Hasil :** Kekuatan kompresi paling tinggi terdapat pada kelompok *glass ionomer cement* yang ditambahkan nanoselulosa serat kulit durian 1,5% dengan rata-rata sebesar  $124.4588 \pm 18.11896$  MPa dan yang paling kecil terdapat pada kelompok kontrol sebesar  $55.3138 \pm 8.99431$  MPa. Bentuk partikel nanoselulosa adalah *whiskers* dengan rerata panjang 236 nm dan lebar 23 nm. **Simpulan :** Terdapat pengaruh penambahan nanoselulosa serat kulit durian (*Durio zibethinus* Murr.) terhadap kekuatan kompresi *glass ionomer cement* konvensional.

**Kata kunci** : Nanoselulosa, kekuatan kompresi, *glass ionomer cement*

**ABSTRACT**

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**THE EFFECT OF DURIAN SKIN FIBER (*Durio zibethinus* Murr.)  
NANOCELLULOSE ADDITION ON THE COMPRESSIVE STRENGTH  
OF CONVENTIONAL GLASS IONOMER CEMENT**

**Background :** Glass ionomer cement is a restorative material that is often used because of its ability to release fluoride so that it can prevent further caries. Glass ionomer cement requires reinforcing material to increase its compressive strength by adding nanocellulose from durian skin fiber (*Durio zibethinus* Murr.). **Purpose :** To determine the effect of the addition of durian skin fiber nanocellulose (*Durio zibethinus* Murr.) on the compressive strength of conventional glass ionomer cement. **Methods :** This type of research is experimental laboratory with the research design in the form of posttest-only control group design. A total of 36 samples were distributed into 4 groups, namely conventional glass ionomer cement added with durian skin fiber nanocellulose (*Durio zibethinus* Murr.) with a concentration of 0.5%, 1%, 1.5%, and without the addition of nanocellulose. A total of 0.5 ml of nanocellulose was tested by TEM to see the shape and size of the particles. The sample was tested by SEM with simple random sampling. The sample was then tested for compressive strength using the Universal Testing Machine (UTM). Data analysis using One-Way ANOVA followed by LSD test. **Results :** The highest compressive strength was found in the glass ionomer cement group with 1.5% durian skin fiber nanocellulose added with an average of  $124.4588 \pm 18.11896$  MPa and the lowest was found in the control group of  $55.3138 \pm 8.99431$  MPa. The shape of the nanocellulose particles is whiskers with an average length of 236 nm and a width of 23 nm. **Conclusion :** There is an effect of adding nanocellulose from durian skin fiber (*Durio zibethinus* Murr.) to the compressive strength of conventional glass ionomer cement.

**Keywords** : Nanocellulose, compressive strength, conventional glass ionomer cement