

ABSTRAK

PENGARUH PENAMBAHAN KITOSAN SEBAGAI *COUPLING AGENT* TERHADAP DAYA SERAP AIR BASIS GIGI TIRUAN RESIN AKRILIK POLIMERISASI PANAS DENGAN *REINFORCEMENT* NANOSELULOSA SEKAM PADI (*Oryza sativa L.*)

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Latar Belakang. Basis gigi tiruan resin akrilik polimerisasi panas merupakan bagian gigi tiruan yang melekat pada jaringan lunak, terdiri dari *polymethyl methacrylate* dan *methyl methacrylate*. Resin akrilik memiliki kekurangan penyerapan air yang tinggi sehingga perlu ditambahkan bahan untuk menurunkan penyerapan air dengan menambahkan kitosan sebagai *coupling agent* dan *reinforcement* nanoselulosa sekam padi. **Tujuan.** Mengetahui pengaruh penambahan kitosan *coupling agent* terhadap daya serap air basis gigi tiruan resin akrilik polimerisasi panas dengan *reinforcement* nanoselulosa sekam padi. **Metode.** Jenis penelitian yang digunakan eksperimental laboratoris rancangan penelitian *pre-post control group design*. Penelitian ini menggunakan tiga macam uji, yaitu *Transmission Electron Microscope* (TEM), daya serap air, dan *Scanning Electron microscope* (SEM). Sampel uji TEM dilakukan dengan *purposive sampling* dengan satu kelompok sebanyak 0,5 g nanoselulosa. Sampel uji daya serap air terdiri dari 4 kelompok masing masing terdiri dari 8 sampel dipilih dengan *simple random* meliputi kelompok penambahan kitosan 1%, 2%, 3%, dan kelompok tanpa penambahan kitosan. Sampel SEM dipilih satu sampel sebelum dan sesudah direndam dari setiap kelompok. Data diuji dengan *One-Way ANOVA* dilanjutkan uji *Post-Hoc LSD*. **Hasil.** Uji TEM menunjukkan nanoselulosa berukuran nanometer dan berbentuk *sphere*. Hasil daya serap air menunjukkan penurunan pada kelompok penambahan kitosan 1% 2% 3% dibandingkan dengan kelompok tanpa penambahan kitosan. Hasil SEM menunjukkan masih terdapat porus dan aglomerasi. **Simpulan.** Terdapat pengaruh penambahan kitosan *coupling agent* terhadap daya serap air basis gigi tiruan resin akrilik polimerisasi panas dengan *reinforcement* nanoselulosa sekam padi.

Kata Kunci : Basis Gigi Tiruan, kitosan, *coupling agent*, nanoselulosa sekam padi, daya serap air.

ABSTRACT

THE EFFECT OF CHITOSAN AS COUPLING AGENT TO WATER SORPTION BASE DENTURE ACRYLIC HEAT CURED WITH REINFORCEMENT NANOCELLULOSE RICE HUSK (*Oryza sativa L.*)

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Background. Denture base acrylic heat cured is part of denture that contact soft tissue, contains polymethyl methacrylate and methyl methacrylate. Denture base acrylic has weakness water sorption, to reduce water sorption with adding chitosan as coupling agent and reinforcement nanocellulose rice husk. **Purpose.** The aim of the study is to discover the effect of chitosan as coupling agent to water sorption base denture acrylic heat cured with reinforcement nanocellulose rice husk. **Method.** The research method used is laboratory experimental with a pre-post control group design. This study used three kinds of tests, TEM, water sorption, and SEM. Samples for TEM using 0,5 gram nanocellulose rice husk was carried out by purposive sampling. Samples for water sorption test consisted by four groups, acrylic heat cured with chitosan 1%, 2%, 3% and without chitosan that each group consisting of 8 samples selected by simple random. Samples for SEM consisting samples from pre and post soaked in artificial saliva for seven days. The analysis was carried out with One Way ANOVA followed by Post Hoc LSD. **Result.** TEM test showing nanocellulose sized nanometer and sphere. Result of water sorption showing the the lowest water sorption in group with chitosan 3%. SEM showing porus and agglomeration. **Conclusion.** The conclusion of this study is there is an effect of adding chitosan as coupling agent to water sorption in base denture acrylic heat cured with reinforcement nanocellulose rice husk.

Keywords: base denture acrylic heat cured, chitosan, coupling agent, nanocellulose rice husk, water sorption.