

ABSTRAK

Formasi biofilm terdiri dari tiga fase: adhesi, maturasi, dan dispersi. *Candida albicans* dapat membentuk biofilm di rongga mulut. Penggunaan gigi tiruan lepasan dapat mendukung perlekatan dan mendukung pembentukan biofilm *C. albicans*.

Akumulasi biofilm dapat menyebabkan *denture stomatitis*. Kitosan memiliki daya antifungal yang dapat menghambat fase adhesi dan mencegah pembentukan biofilm dengan menurunkan jumlah koloni. Tujuan dari penelitian ini adalah mengkaji pengaruh kitosan terhadap fase adhesi *Candida albicans* pada resin akrilik.

Spesimen resin akrilik polimerisasi panas (n=24) direndam dalam suspensi *C. albicans* ATCC 10231 selama 24 jam. Spesimen dibagi menjadi 4 kelompok kemudian direndam dalam akuades (kontrol), kitosan konsentrasi 0,5%, 1%, dan 2% (90 menit). Setiap sampel digetarkan kemudian diencerkan hingga 10^{-1} CFU/mL. Sebanyak 100 μ L larutan dari masing-masing kelompok dibiakkan pada media *Saboraud Dextrose Agar* (SDA) dan diinkubasi selama 24 jam. Jumlah koloni dihitung dan data dianalisis secara statistik ($\alpha=0,05$).

Hasil uji analisis variansi (ANOVA) satu jalur menunjukkan bahwa terdapat pengaruh konsentrasi kitosan terhadap penurunan jumlah koloni *C. albicans* pada plat dasar resin akrilik polimerisasi panas ($p<0,05$). Hasil uji LSD menunjukkan perbedaan rerata antarkelompok yang signifikan ($p<0,05$). Hasil uji konsentrasi hambat minimum (KHM) menunjukkan persentase daya hambat kitosan konsentrasi 0,5%, 1%, dan 2% berturut-turut adalah 47,64%, 66,80%, dan 78,77%. Kesimpulan penelitian ini adalah konsentrasi kitosan berpengaruh terhadap penurunan jumlah koloni *C. albicans*, pengaruh tertinggi pada konsentrasi 2%, dan konsentrasi kitosan pada penelitian bersifat fungistatik.

Kata kunci: *Candida albicans*, fase adhesi, kitosan, resin akrilik polimerisasi panas

ABSTRACT

Biofilm formation involves three phases: adhesion, maturation, and dispersion. *Candida albicans* may forms biofilm in oral cavity. Removable denture may provide attachment for biofilm formation due to *C. albicans*. Biofilm accumulation may cause denture stomatitis. Chitosan is known to have antifungal activity, therefore, it may inhibit the adhesion phase and prevent biofilms formation by reducing the number of colonies of *C. albicans*. The aim of this study was to examine the effect of chitosan on the adhesion phase of *C. albicans* on acrylic resins.

Specimens (n=24) of heat-polymerized acrylic resin were immersed in the suspension of *C. albicans* ATCC 10231 for 24 hours. The specimens were then grouped into 4 groups; the 4 groups were immersed in aquadest (control), chitosan concentration 0,5%, 1%, and 2%, respectively (90 mins). Afterward, each spicemens was vibrated and diluted to 10^{-1} CFU/mL. A total 100 μ L of diluted specimens of each group were grown in Saboraud Dextrose Agar (SDA) media and then incubated for 24 hours. The number of colony was counted and the data obtained were analyzed statistically ($\alpha=0,05$).

The results were analyzed statistically by using of One-Way ANOVA and showed that there were effect of chitosan concentration on the decrease in the number of *C. albicans* colonies ($p<0,05$). Moreover, using LSD test for comparing the result, it showed that there were significant differencies between groups ($p<0,05$). The result of MIC test showed that inhibition of chitosan the percentage of chitosan inhibition concentration of 0,5%, 1%, and 2% were 47,64%, 66,80%, and 78,77%, respectively. The conclusion of this study is the concentration of chitosan affects the decrease in the number of *C. albicans* colonies, the highest effect of chitosan was of 2%, and chitosan activity was as a fungistatics.

Keywords: *Candida albicans*, adhesion phase, chitosan, heat-polymerized acrylic resin