

## INTISARI

Penyakit peri implan merupakan salah satu penyebab utama kegagalan implan yang dapat berkaitan dengan pembentukan biofilm bakteri *Staphylococcus aureus* pada permukaan implan. Penelitian ini bertujuan menganalisis pengaruh pelapisan kitosan–kurkumin terhadap pembentukan biofilm *Staphylococcus aureus* pada permukaan aloi kobalt kromium. Sebanyak 12 spesimen aloi kobalt kromium dibagi menjadi tiga kelompok: tanpa perlakuan, pelapisan kitosan, dan pelapisan kitosan–kurkumin. Pelapisan dilakukan dengan metode *dip coating*, kemudian spesimen direndam dalam suspensi *Staphylococcus aureus* dan diinkubasi selama 48 jam. Setelah inkubasi, spesimen dibilas dengan PBS, diwarnai menggunakan *crystal violet* 0,1% selama 15 menit, dibilas kembali dengan PBS, dan direndam dalam etanol absolut 100%. Larutan hasil perendaman dipindahkan ke *microplate* 96-well dan nilai densitas optik biofilm dibaca menggunakan *microplate reader* pada panjang gelombang 540 nm. Uji *One-way* ANOVA menunjukkan perbedaan yang signifikan antarkelompok ( $p < 0,05$ ), dan uji *Post-Hoc* LSD mengkonfirmasi perbedaan signifikan antara semua pasangan kelompok. Dapat disimpulkan bahwa pelapisan kitosan–kurkumin pada permukaan aloi kobalt kromium menurunkan pembentukan biofilm *Staphylococcus aureus*, yang tercermin dari nilai densitas optik yang lebih rendah dibandingkan kelompok tanpa pelapisan maupun pelapisan kitosan saja.

**Kata Kunci:** *Pelapisan, Biofilm, Staphylococcus aureus, Kitosan, Kurkumin, Aloi kobalt kromium*

### ***ABSTRACT***

Peri-implant disease is a significant cause of implant failure and is closely linked to the formation of *Staphylococcus aureus* biofilm on implant surfaces. This study investigated the impact of chitosan-curcumin coating on the formation of cobalt-chromium specimens were divided into three groups: an uncoated control group, a chitosan-coated group, and a chitosan-curcumin-coated group. The coatings were applied using the dip-coating method, after which the specimens were immersed in a *Staphylococcus aureus* suspension and incubated for 48 hours. After incubation, the specimens were rinsed with PBS, stained with 0.1% crystal violet for 15 minutes, rinsed again with PBS, and then immersed in absolute ethanol. The resulting solutions were transferred to a 96-well flat-bottom microplate, and the optical density of the formed biofilm was measured using a microplate reader at 540 nm. A one-way ANOVA revealed a statistically significant difference among the groups ( $p < 0.05$ ), and Post Hoc LSD analysis confirmed significant differences between all group pairs. In conclusion, coating cobalt-chromium alloy surfaces with chitosan-curcumin significantly reduces *Staphylococcus aureus* biofilm formation. This is evident from the lower optical density values observed in the chitosan-curcumin-coated group compared to both the uncoated and chitosan-only groups.

**Keyword:** *Coatings, Biofilm, Staphylococcus aureus, Chitosan, Curcumin, Cobalt Chromium Alloy*