

## INTISARI

Luka akut pada gingiva berpotensi untuk terinfeksi *Pseudomonas aeruginosa* dan dapat menyebabkan sepsis. Agen antimikroba seperti disinfektan, antiseptik, dan antibiotik, memiliki kemampuan untuk mencegah infeksi bakteri namun antimikroba memiliki efek samping serta dapat menyebabkan resisten jika terjadi penyalahgunaan. Penelitian ini bertujuan untuk mengetahui Potensi nanospray Kombinasi ekstrak Daun Pandan Wangi, minyak atsiri bunga cengkeh, dan kitosan diamati berdasarkan jumlah koloni *Pseudomonas aeruginosa*.

Dua puluh tujuh subjek penelitian dibagi menjadi tiga kelompok perlakuan yaitu nanospray kombinasi 12,5% ekstrak daun pandan wangi, 5% minyak atsiri bunga cengkeh, dan 1% kitosan, kontrol positif Aloclair *spray*, dan kontrol negatif akuades. Uji antibakteri dilakukan dengan menghitung jumlah penurunan koloni bakteri *Pseudomonas aeruginosa* pascaperlakuan. Uji *Gas Chromatography-Mass Spectrometry* dilakukan untuk mengidentifikasi adanya senyawa aktif *phytol* dan eugenol. Uji kualitas dilakukan untuk menguji kualitas sediaan nanospray. Uji fitokimia dilakukan untuk mengidentifikasi adanya senyawa aktif flavonoid, saponin, dan tanin.

Uji antibakteri menunjukkan bahwa nanospray dapat menurunkan jumlah koloni bakteri *Pseudomonas aeruginosa* sebesar  $77,98 \pm 3,11$  % sehingga digolongkan bakteriostatik. Hasil *Welch's One-way ANOVA* membuktikan hipotesis diterima ( $p < 0,05$ ). Hasil uji *post hoc LSD* menunjukkan bahwa kelompok perlakuan memiliki perbedaan signifikan terhadap kelompok kontrol negatif maupun kontrol positif ( $p < 0,05$ ). Uji *Gas Chromatography-Mass Spectrometry* dan uji fitokimia membuktikan keberadaan *phytol*, eugenol, flavonoid, saponin, dan tanin. Uji kualitas sediaan menunjukkan nanospray memiliki standar nanoemulsi yang baik. Kesimpulan dari penelitian ini adalah nanospray kombinasi 12,5% ekstrak daun pandan wangi, 5% minyak atsiri bunga cengkeh, dan 1% kitosan berpotensi sebagai bakteriostatik terhadap *Pseudomonas aeruginosa*.

**Kata Kunci** : nanospray, pandan wangi, cengkeh, kitosan, antibakteri, *Pseudomonas aeruginosa*

## ***ABSTRACT***

Acute gingival wounds have the potential to be infected with *Pseudomonas aeruginosa* and can lead to sepsis. Antimicrobial agents such as disinfectants, antiseptics, and antibiotics, have the ability to prevent bacterial infections but antimicrobials have side effect and can cause resistance if misused occurs. This research aims to determine the potential of nanospray combination of Pandan Wangi leaf extract, clove flower essential oil, and chitosan observed based on the number of *Pseudomonas aeruginosa* colonies.

Twenty-seven research subjects were divided into three treatment groups: nanospray with a combination of 12.5% pandan wangi leaf extract, 5% clove flower essential oil, and 1% chitosan, positive control Alocclair spray, and negative control distilled water. The antibacterial test was carried out by counting the number of decreased colonies of *Pseudomonas aeruginosa* bacteria after treatment. Gas Chromatography-Mass Spectrometry test was conducted to identify the presence of active compounds *phytol* and eugenol. Quality test was conducted to test the quality of the nanospray preparation. Phytochemical test was conducted to identify the presence of active compounds flavonoids, saponins, and tannins.

Antibacterial test showed that nanospray can reduce the number of colonies of *Pseudomonas aeruginosa* bacteria by  $77.98 \pm 3.11\%$  so that it is classified as bacteriostatic. Welch's One-way ANOVA results prove the hypothesis is accepted ( $p < 0.05$ ). The LSD post hoc test results showed that the treatment group had a significant difference from the negative control and positive control groups ( $p < 0.05$ ). Gas Chromatography-Mass Spectrometry test and phytochemical test proved the presence of *phytol*, eugenol, flavonoids, saponins, and tannins. The quality test showed that the nanospray had a good nanoemulsion standard. The conclusion of this research is that the nanospray combination of 12.5% pandan wangi leaf extract, 5% clove flower essential oil, and 1% chitosan has the potential as a bacteriostatic against *Pseudomonas aeruginosa*.

**Kata Kunci** : nanospray, pandan wangi leaf, cloves, chitosan, antibacterial, *Pseudomonas aeruginosa*