

## INTISARI

*Treponema denticola* merupakan bakteri gram negatif yang membentuk koloni pada plak subgingiva dan menjadi agen etiologi penting pada penyakit periodontal. Biji melinjo mengandung senyawa tanin, flavonoid, saponin, dan alkaloid yang dapat dimanfaatkan sebagai agen antibakteri pada perawatan penyakit periodontal. Penelitian ini bertujuan untuk mengetahui pengaruh konsentrasi larutan ekstrak etanolik biji melinjo (*Gnetum gnemon* L.) terhadap daya hambat bakteri periodontopatogen *Treponema denticola* secara *in vitro*.

Objek penelitian adalah bakteri periodontopatogen *Treponema denticola* yang diencerkan sesuai dengan standar 0,5 McFarland ( $1,5 \times 10^8$  CFU/mL). Uji antibakteri dilakukan dengan metode difusi cakram. Sampel penelitian terdiri atas 8 kelompok yaitu kontrol positif (klorheksidin glukonat 0,2%), kontrol negatif (akuades), dan larutan ekstrak etanolik biji melinjo (*Gnetum gnemon* L.) konsentrasi 1,56%, 3,125%, 6,25%, 12,5%, 25%, dan 50%. Pertumbuhan bakteri diamati melalui pengukuran diameter zona hambat setelah diinkubasi selama 1x24 jam. Data hasil penelitian dianalisis menggunakan uji *One Way ANOVA* dan uji *Post Hoc LSD* lalu dilanjutkan dengan uji korelasi *Pearson*.

Hasil penelitian menunjukkan bahwa larutan ekstrak etanolik biji melinjo konsentrasi 6,25%, 12,5%, 25%, dan 50% berpengaruh dalam menghambat pertumbuhan *Treponema denticola* ( $p < 0,05$ ) serta terdapat perbedaan bermakna pada semua kelompok uji perlakuan kecuali antara kelompok kontrol negatif dan konsentrasi 1,56%, kontrol negatif dan konsentrasi 3,125%, serta antara konsentrasi 1,56% dan 3,125%. Uji korelasi *Pearson* juga menunjukkan koefisien korelasi sebesar 0,510 yang berarti hubungan korelasi kuat dan searah. Oleh karena itu larutan ekstrak etanolik biji melinjo (*Gnetum gnemon* L.) konsentrasi 6,25%, 12,5%, 25%, dan 50% memiliki efektivitas daya hambat terhadap pertumbuhan *Treponema denticola* dimana semakin besar konsentrasi ekstraknya semakin besar pula diameter zona hambat yang dihasilkan.

Kata-kata kunci : Ekstrak etanolik, biji melinjo (*Gnetum gnemon* L.), *Treponema denticola*, antibakteri, zona hambat

## ABSTRACT

*Treponema denticola* is a gram-negative bacteria that formed subgingival plaque and is an important etiological agent in periodontal disease. Melinjo seeds contained tannins, flavonoids, saponins and alkaloids which can be used as antibacterial agents in the treatment of periodontal disease. The purpose of this study was to determine the effect of melinjo seeds (*Gnetum gnemon* L.) ethanolic extract's concentration on the inhibition of periodontopathogenic bacteria *Treponema denticola*.

The research object was periodontopathogenic bacteria, *Treponema denticola* which was diluted according to the standard 0.5 McFarland ( $1.5 \times 10^8$  CFU/mL). Antibacterial test was carried out by disc diffusion method. The research sample consisted of 8 groups, namely positive control (chlorhexidine gluconate 0.2%), negative control (aquades), and melinjo seeds's ethanolic extract (*Gnetum gnemon* L.) concentrations 1.56%, 3.125%, 6.25%, 12.5%, 25%, and 50%. Bacterial growth was observed by measuring the diameter of the inhibition zone after 24 hours of incubation. The research data were analyzed using *One Way ANOVA* test and *Post Hoc LSD* test and then continued with the *Pearson* correlation test.

The results showed that the melinjo seeds ethanolic extract's concentrations of 6.25%, 12.5%, 25%, and 50% had a significant effect on inhibiting the growth of *Treponema denticola* ( $p < 0.05$ ) and there were significant differences in all experimental test groups except between the negative control group and the concentration 1.56%, the negative control and the concentration 3.125%, and between the concentration 1.56% and 3.125%. The *Pearson* test also shows a coefficient correlation of 0.510 which means a strong and positive correlation. Therefore, the ethanolic extract of melinjo seeds (*Gnetum gnemon* L.) concentrations of 6.25%, 12.5%, 25%, and 50% has an effective inhibitory effect on the growth of *Treponema denticola* where the greater the extracts' concentration, the greater the diameter of the inhibition zone.

Keywords : ethanolic extract, melinjo seed (*Gnetum gnemon* L.), *Treponema denticola*, antibacterial, zone of inhibition