

PENGARUH EKSTRAK DAUN JATI (*Tectona grandis*) SEBAGAI INHIBITOR PERTUMBUHAN DAN AKTIVITAS UREASE BAKTERI *Xanthomonas campestris*

INTISARI

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Limbah amonia (NH_3) timbul akibat proses pemeliharaan ayam. Gas ini cukup berbahaya bagi produktivitas dan kesehatan ternak maupun manusia yang menghirupnya. Salah satu upaya mengurangi pencemarannya yaitu menggunakan senyawa bioaktif untuk mencegah pertumbuhan bakteri dan kinerja urease yang dapat menguraikan urea menjadi amonia. Salah satu sumber senyawa bioaktif tersebut yaitu daun Jati. Penelitian ini bertujuan untuk mengetahui potensi ekstrak daun Jati yang mudah didapatkan sebagai agen penghambat pertumbuhan dan aktivitas urease bakteri *Xanthomonas campestris*. Penelitian dilakukan dengan menggunakan rancangan acak lengkap (RAL) pola searah dengan perlakuan lima level konsentrasi ekstrak daun jati (w/v) yaitu $P_0(0\%)$; $P_1(25\%)$; $P_2(50\%)$; $P_3(75\%)$; $P_4(100\%)$. Tiap perlakuan diulang sebanyak tiga kali. Bakteri *Xanthomonas campestris* digunakan sebagai representasi bakteri yang ada di kandang. Variabel yang diamati yaitu aktivitas urease, aktivitas antibakteri pada medium padat, aktivitas antibakteri pada medium cair, viabilitas sel bakteri, dan aktivitas enzim urease. Data yang diperoleh dianalisis statistik menggunakan rancangan acak lengkap (RAL) pola searah dan dilanjutkan dengan Uji *Duncan multiple Range Test* (DMRT). Ekstrak daun Jati diperoleh dengan metode maserasi menggunakan pelarut ethanol 96%. Hasil penelitian menunjukkan daya hambat paling optimum dimiliki perlakuan P_3 pada aktivitas antibakteri padat dan cair serta viabilitas sel bakteri. Hasil pengujian aktivitas enzim urease menunjukkan daya hambat paling optimum dimiliki perlakuan P_1 . Berdasarkan hasil penelitian ini, diketahui bahwa ekstrak daun jati memiliki senyawa antibakteri yang dapat menghambat pertumbuhan bakteri, namun apabila pemberian ekstrak terlalu banyak justru dapat menambah kinerja urease.

Kata Kunci : Ekstrak daun jati, Antibakteri, *Xanthomonas campestris*, urease inhibitor

EFFECT OF TEAK LEAF EXTRACT (*Tectona grandis*) AS AN GROWTH AND UREASE INHIBITOR FROM *Xanthomonas campestris*

ABSTRACT

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Ammonia (NH₃) waste is produced as a result of the chicken rearing process. This gas is quite harmful for the productivity and health of livestock and humans who inhale it. The accumulation of excreta in the cage causes the bacteria present in the excreta to break down urea compounds into ammonia. One of the efforts to reduce and even prevent ammonia gas pollution is by using bioactive compounds that can prevent bacterial growth and urease performance, for example the bioactive compounds present in teak leaf extract. This study aims to determine the potential of teak leaf extract which is easily available as an inhibitor of growth and urease activity of *Xanthomonas campestris* bacteria. *Xanthomonas campestris* has been shown to produce the urease enzyme which can decompose urea into ammonia. *Xanthomonas campestris* bacteria is used in this study intended as a representation of bacteria in the cage. The study used a completely randomized design (*one-way ANOVA*) with 5 levels of teak leaf extract concentration (w/v) treatment, there was P₀ (0%); P₁(25%); P₂(50%); P₃(75%); P₄(100%). Each treatment was repeated three times. The variables observed were urease activity, antibacterial activity in solid medium, antibacterial activity in liquid medium, bacterial cell viability, and urease enzyme activity of *Xanthomonas campestris* bacteria. The result data were analyzed statistic by *one-way ANOVA* and continued with the DMRT test. Teak leaves extract is produced using maceration method with 96% ethanol for that solvent. The results obtained were the most optimum inhibition of P₃ treatment on solid medium and liquid medium antibacterial activity and bacterial cell viability. The results of testing the activity of the urease enzyme showed that the most optimum inhibitory power was P₁ treatment. Based on these results, it is known that teak leaf extract has antibacterial compounds that can inhibit bacterial growth, but if the extract is given too much it can increase the performance of urease.

Keyword : Extract teak leaf, antibacteria, *Xanthomonas campestris*, urease inhibitor