INTISARI

Pengaruh Nanoemulsi Ekstrak Daun Jati (*Tectona grandis* Linn) sebagai Bioantelmintik Terhadap *Haemonchus sp.* secara *In Vitro*

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Infeksi cacing gastrointestinal banyak terjadi pada ruminansia dan menjadi penghambat utama produktivitas ruminansia. Haemonchiasis merupakan salah satu masalah besar bagi peternakan. Penggunaan obat cacing farmasi secara terus-menerus telah mengakibatkan peningkatan resistensi obat cacing yang nyata. Resistensi ini ditandai dengan penurunan sensitivitas populasi parasit terhadap obat cacing yang sebelumnya efektif terhadapnya. Penelitian ini bertujuan untuk mengkaji potensi nanoemulsi ekstrak daun jati sebagai bioantelmintik. Nanoemulsi ekstrak daun jati dibuat dari daun jati yang diambil dari hutan rakyat Gunungkidul, Yogyakarta. Nanoemulsi ekstrak daun jati dibuat menjadi tiga kelompok yaitu nanoemulsi ekstrak daun jati 3%, 5%, dan 7%, serta NaCl sebagai kontrol negatif dan *albendazole* sebagai kontrol positif. Pengaruh antelmintik nanoemulsi ekstrak daun jati diamati dengan analisis uji *in vitro* mortalitas cacing *Haemonchus sp*, pengamatan cacing secara mikroskopis, dan *scanning electron microscopy*. Pengamatan dilakukan pada 0.5 jam, 1 jam, 2 jam, 3 jam, 4 jam, 6 jam, 8 jam, dan 12 jam pada uji *in vitro* mortalitas cacing *Haemonchus sp*. Hasil uji in vitro mortalitas cacing *Haemonchus sp* dianalisis menggunakan uji non parametrik Kruskal-Wallis dan Mann Whitney serta *survival curve* menggunakan perangkat lunak Statistical Package for the Social Sciences® 30.0. Hasil penelitian *in vitro* menunjukkan bahwa konsentrasi nanoemulsi ekstrak daun jati sebesar 3%, 5%, dan 7% berpengaruh terhadap kematian *Haemonchus sp*. Konsentrasi 7% mampu membunuh semua cacing *Haemonchus sp* dewasa dalam waktu 4 jam. Analisis menggunakan *scanning electron microscope* menunjukkan adanya kerusakan pada struktur kutikula cacing. Nanoemulsi ekstrak daun jati hingga 7% dapat menjadi alternatif bioantelmintik terhadap *Haemonchus sp.*

Kata kunci: *in vitro*, nanoemulsi, *scanning electron microscopy*, *Tectona grandis* Linn

ABSTRACT

The Effect of Teak Leaves Extract (*Tectona grandis* Linn) Nanoemulsion as Bioanthelmintic for *Haemonchus sp In Vitro*

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Gastrointestinal worm infections are common in ruminants and are a major obstacle to ruminant productivity. Haemonchiasis is one of the major problems for livestock farming. Continuous use of pharmaceutical anthelmintics has resulted in a significant increase in anthelmintic resistance. This resistance is characterized by a decrease in the sensitivity of the parasite population to anthelmintics that were previously effective against them. This study aimed to examine the potential of teak leaf extract nanoemulsion as a bioanthelmintic. Teak leaf extract nanoemulsion was made from teak leaves taken from the Gunungkidul community forest, Yogyakarta. Teak leaf extract nanoemulsions were made into three groups, namely 3%, 5%, and 7% teak leaf extract nanoemulsions, and NaCl as a negative control and albendazole as a positive control. The anthelmintic effect of teak leaf extract nanoemulsion was observed by analyzing the *in vitro* mortality test of *Haemonchus sp* worms, microscopic observation of worms, and scanning electron microscopy. Observations were made at 0.5 hours, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 8 hours, and 12 hours in the in vitro mortality test of *Haemonchus sp* worms. The results of the *in vitro* mortality test of *Haemonchus sp* worms were analyzed using the non-parametric Kruskal-Wallis and Mann Whitney tests and survival curves using the Statistical Package for the Social Sciences® 30.0 software. The results of *in vitro* studies showed that concentrations of teak leaf extract nanoemulsion of 3%, 5%, and 7% affected the death of *Haemonchus sp*. A concentration of 7% was able to kill all adult *Haemonchus sp* worms within 4 hours. Analysis using a scanning electron microscope showed damage to the worm's cuticle structure. Teak leaf extract nanoemulsion up to 7% can be an alternative bioanthelmintic against *Haemonchus sp*..

Keywords: *in vitro*, nanoemulsion, *scanning electron microscopy, Tectona grandis* Linn