

PENGUNAAN TOTAL MIXED RATION PROTEIN TINGGI DAN AGEN ANTHELMINTIKA PADA DOMBA EKOR TIPIS

INTISARI

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Domba ekor tipis (DET) merupakan domba lokal Indonesia yang unggul karena *prolific* dan daya adaptasinya tinggi, namun produktivitasnya di tingkat peternak masih relatif rendah. Secara umum penelitian ini dilakukan untuk mengetahui potensi nutrisi dan efektivitas hijauan pakan pilihan yang mengandung tanin dengan dipadukan pakan sumber protein sebagai agen anthelmintika sekaligus dalam upaya mendukung kinerja ternak DET di negara tropik khususnya Indonesia. Penelitian ini dibagi menjadi dua tahap. Penelitian tahap I adalah evaluasi komposisi kimia dan potensi antiparasit infusa hijauan pakan terhadap *Haemonchus c* secara *in vitro*. Hijauan pakan yang dievaluasi adalah *Artocarpus h*, *Calliandra c*, *Indigofera z*, *Melia a*, *Azadirachta i* dan *Bambusa v*. Evaluasi hijauan pakan meliputi komposisi nutrisi dan aktivitas antiparasitnya terhadap telur dan mortalitas cacing *Haemonchus c* secara *in vitro*. Hijauan pakan dengan potensi antiparasit terbaik akan digunakan sebagai bahan penyusun ransum *functional feed* dalam bentuk *total mixed ration* (TMR) pada tahap II.b. Penelitian tahap II dibagi kedalam dua bagian yaitu tahap II.a dan II.b. Penelitian tahap II.a merupakan simulasi kondisi lapangan yang dilakukan di laboratorium. DET disimulasikan dengan diinfeksi larva 3 (L3) *Haemonchus c* seiring dengan penambahan frekuensi waktu pemberian pakan. Kelompok perlakuan frekuensi pemberian pakan yaitu (T1) Frekuensi pemberian pakan 2 kali per hari (Pukul 08.00 dan 15.00); (T2) Frekuensi pemberian pakan 3 kali per hari (Pukul 06.00, 12.00 dan 18.00); (T3) Frekuensi pemberian pakan 4 kali per hari (Pukul 06.00, 10.00, 14.00 dan 18.00) dan (T4) Frekuensi pemberian pakan 5 kali per hari (Pukul 06.00, 09.00, 12.00, 15.00 dan 18.00). Setiap perlakuan terdiri dari 4 ekor domba sebagai ulangan. Tujuan penelitian tahap II.a adalah mendapatkan data dasar mengenai pola pemeliharaan peternak dengan cara digembalakan terhadap kebutuhan gizi dan infestasi parasit *Haemonchus c*. Penelitian tahap II.b adalah evaluasi *functional feed* dalam bentuk TMR protein tinggi dan agen anthelmintika terhadap kinerja produksi DET dan potensi antiparasitnya. Tujuan penelitian tahap II.b adalah melakukan rekayasa pakan ternak berupa TMR berkomposisi hijauan pakan yang memiliki potensi antiparasit yaitu *Artocarpus h*, bahan pakan sumber protein tinggi yaitu *soybean meal* (SBM) dan pakan basal *P. purpureum cv. Mott*. Kelompok perlakuan adalah T1 (761,50 gram BK *P. purpureum cv. Mott*), T2 (609,2 gram BK *P. purpureum cv. Mott*+284,13 gram BK *Artocarpus h*), T3 (609,20 gram BK *P. purpureum cv. Mott*+65,0 gram BK SBM), T4 (609,20 gram BK *P. purpureum cv. Mott*+162,36 gram BK *Artocarpus h*+65,0 gram BK SBM) dan T5 (609,20 gram BK *P. purpureum cv. Mott*+284,13 gram BK *Artocarpus h*+65,0 gram BK SBM). Parameter yang diamati adalah konsumsi nutrisi, pencernaan, sintesis protein mikroba, keseimbangan nitrogen, penambahan bobot badan harian (PBBH) dan *egg per gram* (EPG) feses. Penelitian dirancang menggunakan rancangan acak lengkap pola searah dan dianalisis variansi. Hasil penelitian Tahap I menunjukkan bahwa seluruh sampel hijauan pakan mengandung zat kimia



tanin yang diproyeksikan sebagai bioanthelmintika. Infusa daun *Artocarpus h* memiliki kemampuan antiparasit terbaik dengan indikasi 87,75% dan daya mortalitas 80,00%. Hasil penelitian tahap II.a. menunjukkan bahwa infeksi larva 3 (L3) per oral DET percobaan seiring dengan peningkatan frekuensi waktu pemberian pakan memberikan pengaruh yang nyata ($P<0,05$) terhadap konsumsi BK, BO, ETN, TDN, N-NDF dan N-ADF. Kecernaan yang berpengaruh nyata ($P<0,05$) adalah kecernaan BK, BO, PK, SK, LK, ETN, NDF, ADF dan N-ADF. Data level infeksi mengindikasikan bahwa peningkatan frekuensi waktu pemberian pakan beriring dengan peningkatan level infeksi *Haemonchus c* pada DET. Data PBBH menunjukkan hasil yang tidak signifikan ($P>0,05$). Hasil penelitian tahap II.b. menunjukkan bahwa aplikasi *functional feed* berupa TMR protein tinggi dan agen anthelmintika yang diaplikasikan pada DET terinfeksi *Haemonchus c* memberikan pengaruh yang nyata ($P<0,05$) konsumsi BK, BO, ETN, TDN, N-NDF dan N-ADF. Kecernaan yang berpengaruh nyata ($P<0,05$) adalah kecernaan BK, BO, PK, SK, LK, ETN, NDF, ADF dan N-ADF. Kinerja produksi DET diindikasikan dengan keseimbangan N yang positif, PBBH yang signifikan ($P<0,05$) dan tingkat kesembuhan infeksi *Haemonchus c* paling tinggi pada T5 dengan ransum T5 (609,20 gram BK *P. purpureum* cv. *Mott*+284,13 gram BK *Artocarpus h*+65,0 gram BK SBM).

Kata kunci: bioanthelmintika, domba ekor tipis, frekuensi pakan, *Haemonchus contortus*, hijauan pakan, total mixed ration

USE OF TOTAL MIXED RATION HIGH PROTEIN AND ANTHELMINTIC AGENTS IN THIN TAIL SHEEP

ABSTRACT

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Thin tailed sheep is a local Indonesian sheep that is superior to other breeds in terms of prolificacy and adaptability to local conditions, but its productivity is still relatively low, possibly due to high worm burden. This study was conducted to determine the nutritional potential and effectiveness of selected forage containing tannins in combination with protein source as feed with anthelmintic properties in an effort to reduce worm burden and to support the performance of Thin-tailed sheep in Indonesia. This research is divided into two stages. The first phase of the research was to evaluate the chemical composition and antiparasitic potential of forage infusion against *Haemonchus c* in vitro. The forages evaluated were *Artocarpus h*, *Calliandra c*, *Indigofera z*, *Melia a*, *Azadirachta i* and *Bambusa v*. Evaluation of forage includes nutrient composition and antiparasitic activity on eggs and mortality of *Haemonchus c* worms in vitro. Forage with the highest antiparasitic potential was selected as a component of functional feed rations in the form of total mixed ratio (TMR). Phase II research was divided into two parts, namely stages II.a and II.b. Phase II.a research is a simulation of field conditions carried out in the laboratory. The Thin-Tailed Sheep (DET) were infected with 3 (L3) larvae of *Haemonchus c* along with increasing the frequency of feeding time. The feeding frequency treatment group was (T1) the frequency of feeding 2 times per day (at 08.00 and 15.00); (T2) Frequency of feeding 3 times per day (at 06.00, 12.00 and 18.00); (T3) The frequency of feeding is 4 times per day (at 06.00, 10.00, 14.00 and 18.00) and (T4) the frequency of feeding is 5 times per day (at 06.00, 09.00, 12.00, 15.00 and 18.00). Each treatment consisted of 4 sheep as replicates. The purpose of the research phase II.a was to obtain basic data regarding the pattern of rearing breeders by means of grazing on nutritional needs and *Haemonchus c* parasite infestation. Phase II.b research was to evaluate functional feeds in the form of high protein TMR and anthelmintic agents on the performance of Thin-tailed sheep production and antiparasitic potential. The purpose of the research phase II.b is to engineer animal feed in the form of TMR with forage compositions that have antiparasitic potential, namely *Artocarpus h*, high protein source feed ingredients, namely soybean meal (SBM) and basal feed *P. purpureum cv. mott*. The treatment groups were T1 (761,50 grams DM *P. purpureum cv. Mott*), T2 (609,2 grams DM *P. purpureum cv. Mott*+284,13 grams DM *Artocarpus h*), T3 (609,20 grams DM *P. purpureum cv. Mott*+65,0 gram DM SBM), T4 (609,20 gram DM *P. purpureum cv. Mott*+162,36 gram DM *Artocarpus h*+65,0 gram DM SBM) and T5 (609,20 gram DM *P. purpureum cv. Mott*+284,13 gram DM *Artocarpus h*+65,0 gram DM SBM). Parameters observed were nutrient consumption, digestibility, microbial protein synthesis, nitrogen balance, ADG and eggs per gram (EPG) of feces. The study was designed using a completely randomized design with a unidirectional pattern and analyzed for variance. The results of the Phase I study showed that all forage samples contained chemical tannins which were projected as bioanthelmintics. Leaf infusion of *Artocarpus h*



had the best antiparasitic ability with an indication of 87,75% and a mortality rate of 80,00%. The results of the research phase II.a. showed that the infection of larvae 3 (L3) per oral DET experiment along with the increase in the frequency of feeding time had a significant effect ($P<0.05$) on the consumption of DM, OM, NFE, TDN, N-NDF and N-ADF. Digestibility that had a significant effect ($P<0.05$) was the digestibility of DM, OM, CP, CF, EE, ETN, NDF, ADF and N-ADF. The infection level data indicated that an increase in the frequency of feeding time was accompanied by an increase in the level of *Haemonchus c* infection in DET. PBBH data showed insignificant results ($P>0.05$). The results of the research phase II.b. showed that the application of functional feed in the form of high protein TMR and anthelmintic agents applied to DET infected with *Haemonchus c* had a significant effect ($P<0.05$) on the consumption of DM, OM, NFE, TDN, N-NDF and N-ADF. Digestibility that had a significant effect ($P<0.05$) was the digestibility of DM, OM, CP, CF, EE, ETN, NFE, ADF and N-ADF. The performance of thin tailed sheep production was indicated by positive N balance, significant ADG ($P<0,05$) and the highest cure rate of *Haemonchus c* infection at T5 with T5 ration (609,20 grams of DM *P. purpureum* cv. *Mott*+284,13 gram DM *Artocarpus h*+65,0 gram DM SBM).

Keywords: bioanthelmintic, feed frequency, forage, *Haemonchus contortus*, thin-tailed sheep, total mixed ration