

The Effectiveness of Meniran (*Phyllanthus niruri*) and Gotu Kola (*Centella asiatica*) Herbs on Broiler Chicken Performance

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Abstract

This study aims to determine the performance of broiler chickens given *Phyllanthus niruri* and *Centella asiatica* extracts. The research was conducted for 32 days at the Animal Husbandry Practice Unit of the Karanganyar Animal Husbandry Academy. The material used was 100 broiler Cobb strains aged 4 days, kept in 20 experimental units, each unit consisting of 5 chickens with an average initial weight of 111.08 ± 4.74 g. The first treatment (T0) control, chicken without giving *P. niruri* and *C. asiatica* extracts, the second treatment (T1) the chicken was given 10 ml *P. niruri* extract per liter of drinking water, the third treatment (T2) the chickens were given 5 ml *P. niruri* extract and 5 ml *C. asiatica* extract, per liter of drinking water, the fourth treatment (T3) of chickens was given *C. asiatica* extract 10 ml per liter of drinking water. The variables observed included drinking water consumption, feed consumption, average daily gain, and feed conversion ratio (FCR). The design used was a completely randomized design (CRD). The data were analyzed for variety and if there was a significant effect of the treatment, it was continued with the Duncan Multiple Distance Test to determine differences in treatment. The results showed that drinking water consumption, and average daily gain were not significantly different between treatments, feed consumption (g/head/day) and feed conversion ratio was significantly different between treatments. The conclusion of this research is that giving *P. niruri* and *C. asiatica* extracts in drinking water affect the performance of broiler chicken.

Keywords : Average daily gain, feed conversion ratio, *P. niruri* and *C. asiatica* extract, feed consumption,

Introduction

One of the factors that support the success of broiler chicken maintenance is livestock health. Efforts to increase broiler immunity is to provide supplements and drugs such as antibiotics. The use of chemical antibiotics can cause harmful residues contained in the chicken body. One way to solve this problem is to provide additional feed (feed additive) in the form of herbal ingredients to increase appetite, egg production and body resistance (Andari et al., 2018).

The development of the use of traditional medicines derived from plants to help improve health status is quite widespread. Medicinal plants serve as an alternative to natural feed additives that can replace commercial feed additives that can increase immunity and produce meat efficiently. Types of plants that can be used as natural feed additives are meniran (*Phyllanthus niruri*) and gotu kola (*Centella asiatica*).

Meniran is an herbal plant originating from the *Phyllanthus* genus with the scientific name *Phyllanthus niruri* linn, this plant is efficacious as an antibacterial and antioxidant substance (immunomodulator). Meniran herbs contain alkaloids, flavonoids, saponins, steroids, tannins, and phenolics (Rivai et al., 2013). The ingredients contained in the meniran plant according to Mangunwardoyo (2009) and Wibowo (2009) are lignans (philanthine, hypophilantin, nirantin, Lintetralin), flavonoids (quercetin, quercitrin, astragalin, kaempferol, Rhamnopyrinoside), triterpenes and fatty acids. The plant also contains philanthine, hypophilanthine, hypotetralin, nirantin and nirtetrakine which are chemical compounds that have antibacterial activity. In addition, meniran (*Phyllanthus niruri*) can increase endurance. Its role as an immunomodulator makes the immune system more active in carrying out its functions.

Gotu kola (*Centella asiatica*) is a plant that is widely used as traditional medicine to cure various diseases. Sutardi (2016) states that the gotu kola plant contains vitamins, minerals and active ingredients that are useful for maintaining a healthy body. Gotu kola (*Centella asiatica*) contains several bioactive compounds such as asiaticoside in the form of glycosides, which are widely used in traditional medicinal ingredients or herbal medicine, both in the form of ingredients and as single ingredients (Dewi et al., 2018). The gotu kola plant (*Centella asiatica*) also contains resins, tannins, essential oils, sitosterols consisting of glycerides, oleic acid, linoleic, palmitic, palmitic, stearic, sentoic and sentelate which are useful for boosting the body's immune system. The gotu kola plant (*Centella asiatica*) contains glucoside madecoside compounds in the leaves and petioles, these compounds have anti-inflammation and antitumor effects. The vallerin compound is found in the leaves and the resin is found in the roots. Both compounds give a bitter taste or contain concentrated acids. Ramadhan (2015) stated that the gotu kola plant can be consumed because it has benefits for treatment, one of which is that gotu kola functions as an antibacterial. Besung (2011) stated that gotu kola phagocytic cells such as macrophages and neutrophils play an important role in eliminating all infectious agents that enter the body. Research by Siregar et al. (2017) mentioned that the administration of gotu kola extract could reduce the feed conversion of broiler chickens. The aim of this study was to examine the performance response of broiler chickens after administration of meniran (*Phyllanthus niruri*) and gotu kola (*Centella asiatica*) extracts.

Materials and Methods

The research was carried out at the Animal Practice Unit of the Karanganyar Animal Husbandry Academy for 32 days. The material used was 100 broilers Strain Cobb aged four days, with an average initial weight of 111.08 g/head. The feed given was commercial feed containing 22% CP. The treatment applied was the administration of extracts of meniran and gotu kola in drinking water as much as 10 ml/liter of drinking water. Chickens were divided into 4 treatment groups, 5 replicates and each replication consisted of 5 tails. Giving meniran extract and gotu kola as follows :

T0 : water intake without extract

T1 : water intake plus meniran extract,

T2: water intake plus meniran extract and gotu kola with 50% : 50% ratio,

T3 : water intake plus gotu kola extract.

The observed variables included drinking water consumption, feed consumption, average daily gain, and feed conversion.

Meniran powder and gotu kola were extracted with a ratio of 1: 10 (powder: water) for 15 minutes at 90° C after boiling water, then filtered. The extract is evaporated until thick.

The data obtained were tested by analysis of variance. If there is a significant difference between treatments, it is continued with Duncan's New Multiple Range Test.

Results and Discussion

The results of the study of giving meniran leaf flour extract (*Phyllanthus niruri*) and gotu kola (*Centella asiatica*) in water intake are shown in the following table.

Water intake

Water intake ranged from 237.25 - 265.26 ml/head/day. The results of the analysis showed that the administration of meniran extract, gotu kola and a mixture of meniran and gotu kola in water intake was not significantly different ($P>0.05$). The alkaloids contained in meniran and the vellarine substance in gotu kola cause a bitter taste so that they become anti-nutritional substances. According to Kahiri (2009), chicken is less sensitive to taste, because it only has 24 senses of taste. So it can be interpreted that the control drinking water without extract and the one given the extract did not affect the water intake for broiler chickens.

Table 1. Average Water Intake, Feed Consumption, Average Daily Gain and Feed Conversion

Variable	Treatment			
	T0	T1	T2	T3
Water intake (ml/head/day)	265.26	246.23	237.25	260.61
Feed intake (g/head/day)	87.64 ^c	81.15 ^a	83.12 ^b	84.86 ^b
Average daily gain (g/head/day)	51.04	52.56	52.61	53.50
Feed conversion	1.72 ^a	1.55 ^b	1.58 ^b	1.59 ^b

Description : Different superscripts show significant differences ($P<0.05$)

Anonimus (2017) stated that the average water intake standard for broiler chickens is 180 ml/head/day. While in this study the average drinking water consumption was between 237.25 to 265.26 ml/head/day, drinking water consumption in this study was higher than the standard drinking water consumption, possibly due to the high ambient temperature during the day ranging from 32 – 33° C. According to Risnajati (2011), chickens water intake 2 times greater than the weight of the feed they consume because water intake functions as a solvent and a means of transporting nutrients to be distributed throughout the body so that more water is needed than food.

Feed intake

The results of the analysis showed that the feed intake was significantly different ($P < 0.01$). Treatment T0 (without extract) was significantly different from the treatment with the extract, the treatment of meniran extract was significantly different from the gotu kola extract and the mixture of gotu kola extract, the mixed extract of gotu kola was not significantly different from the gotu kola extract. such as alkaloids, flavonoids, saponins, and tannins which are very effective in suppressing the growth of pathogenic bacteria and improving intestinal morphological characteristics so that chickens can absorb feed nutrients properly and make chickens healthier (Saputra et al., 2015). Philanthine or hypophilanthine present in meniran is the main component that is efficacious in protecting the liver from toxic substances, either in the form of parasites, drugs, viruses or bacteria (Kardiman and Kusuma, 2004), so that it can be interpreted that chickens in meniran treatment are healthier and consume more feed. efficient than control. the control differs very markedly with meniran.

Different from the research of Siregar et al. (2017), giving gotu kola extract did not affect broiler feed consumption with a consumption range of 77.06 g to 85.59g.

The control treatment was significantly different from the meniran extract. Giving meniran leaf flour extract in drinking water was able to provide lower feed intake than the control treatment, this was because the meniran contained flavonoids as immunomodulators that were able to increase the work of immune cells so as to increase the immunity of chickens after vaccination, ward off viruses, bacteria or other microbes. Kahono (2010) stated that meniran herbs have a bitter taste, slightly sour, and are cool or cooling and astringent, efficacious in cleansing the liver, anti-inflammatory, fever-reducing (antiperipheral), diuretic, phlegm laxative and explaining vision. The bitter taste is able to stimulate the secretion of the salivary glands and increase the production of antibodies so that the immune system increases. Phytobiotic additives in meniran containing phytochemical components have antibacterial and antioxidant effects such as alkaloids, flavonoids, saponins, and tannins which are very effective in suppressing the growth of pathogenic bacteria and improving intestinal morphological characteristics so that chickens can absorb feed nutrients properly and make chickens healthier. (Saputra, et al., 2015). Philanthine or hypophilanthine present in meniran is the main component that is efficacious in protecting the liver from toxic substances, either in the form of parasites, drugs, viruses or bacteria (Kardiman and Kusuma, 2004), so that chickens are more efficient in consuming feed.

Giving gotu kola extract reduces feed consumption because gotu kola contains triterpenoids as natural antibiotics that are able to provide a calming effect, help the heart's performance to circulate blood throughout the body for metabolic processes, and can also accelerate blood circulation to the brain so that chickens become healthier and absorb feed nutrients efficiently. (Sutardi, 2016). Gotu kola can also function as a hepatoprotector that is able to increase antioxidant enzymes such as superoxidant dismutase (SOD), catalase, glutathione peroxidase, and antioxidant glutathione (GSH), (Syifaiyah, 2008), so that chickens given gotu kola extract are healthier and consume feed more efficiently.

Average daily gain

Giving meniran extract and gotu kola did not affect body weight gain in broiler chickens. Giving meniran leaf flour extract and gotu kola numerically had a better tendency to increase daily body weight gain. Broiler chickens treated with extract were able to consume lower feed but could achieve a body weight gain that was relatively the same as the control treatment. Flavonoids, alkaloids, saponins and tannins in meniran and gotu kola have antibacterial and antioxidant effects that are very effective in suppressing the growth of pathogenic bacteria and improving intestinal morphological characteristics. So that the chickens that were treated with extracts were healthier and able to consume feed more efficiently than those without treatment. Body weight gain is influenced by several factors, namely chicken strain, gender, environmental factors, gender, management, where the chickens are kept, quality and quantity of feed (Ramadani et al., 2015). Body weight gain in this study (51.04-53.50 g/head/day) was higher than the standard according to Adnan (2011), which was 49.22 g/head/day.

Feed Conversion

Giving meniran extract and gotu kola decreased feed conversion ($P < 0.05$). The control treatment was significantly different from the administration of the extract. The content of flavonoids in meniran as an immunomodulator is able to increase the work of immune cells so as to increase the immunity of chickens after vaccination, ward off viruses, bacteria or other microbes.

Gotu kola functions as a hepatoprotector that is able to increase antioxidant enzymes such as superoxidan dismutase (SOD), catalase, glutathione peroxidase, and antioxidant glutathione (GSH), (Syifaiah, 2008), so that chickens consume lower feed with the same body weight gain as the control treatment, so that low feed conversion.

Giving meniran extract and gotu kola at a dose of 10 ml/liter of water in drinking water can increase the efficiency of broiler feed. The lower the feed conversion, the better the efficiency of feed use.

Conclusion

Giving meniran extract and gotu kola in drinking water reduced feed intake and feed conversion, but did not affect drinking water consumption and body weight gain.

References

- Adnan, K. 2011. Cara Hitung keuntungan Peternakan Broiler. [:https://dokterternak.com/2011/08/26/menghitung-keuntungan-peternakan-broiler](https://dokterternak.com/2011/08/26/menghitung-keuntungan-peternakan-broiler). Diakses 6 Desember 2021
- Andari, A. Anisa, E.N., Wulandari, R.F & Suci, D.M. 2018. Efek suplementasi “Jamu Rempah” pada puyuh (*Coturnix coturnix japonica*) terhadap performa dan kadar kolesterol telur. Jurnal Ilmu Nutrisi dan Teknologi Pakan. 16 (2), 34-41

- Anonimus, 2017. Standar Bobot Badan Ayam Broiler Lengkap Dari Berbagai Strain.<http://dokterunggas.com/2016/01/27/standar-bobot-badan-ayam-broiler-lengkap-dari-berbagai-strain/> .Diakses pada 6 Desember 2021
- Astuti, P., dan Suropti, H., 2016. Kajian Herbal Meniran (*Phyllanthus niruri* L) dan Sambiloto (*Andrographis paniculata*) sebagai Pengganti Fed Additive Komersial untuk Meningkatkan Tanggapan Kekebalan dan Performans Ayam Buras. *Enterprenuership* Hal : 437 – 444
- Besung, I.N.K. 2011. Pengaruh ekstrak pegagan (*Centella asiatica*) dalam meningkatkan kapasitas fagosit makrofag peritoneum mencit terhadap salmonella typhi. *Buletin Veteriner Udayana*.
- Dewi, M., Malvin, T., Noor, P.S. and Amir, Y.S., 2018. Pengaruh Penambahan Pegagan (*Centtela aciatica*) Sebagai Pakan Additif Broiler Terhadap Persentase Karkas dan Lemak Abdomen. *Prosiding, Politeknik Pertanian Negeri Payakumbuh*.
- Kahono, J. Y. 2010. Pengaruh Herbal Meniran (*Phyllanthus niruri* L) Terhadap kadar Trigliserida darah Tikus (*Rattus norvegicus*).. Universitas Sebelas Maret.
- Kardinan, Agus. dan F.R. kusuma, 2004. Meniran Penambah Daya Tahan Tubuh Alami. *AgroMedia Pustaka, Jakarta*.
- Mangunwardoyo, W., E. Cahyaningsih, dan T. Usia. 2019. Ekstraksi dan identifikasi Antimikroba Herba Meniran (*Phyllanthus nururi*). *Jurnal Ilmu Kefarmasian Indonesia*. 57-63
- Ramadhan. N.S., R. Rasyid dan Elmaris Sy. 2015. Daya hambat ekstrak daun pegagan (*Centella asiatica*) yang diambil di Batusangkar terhadap pertumbuhan kuman *Vibrio cholera* secara in vitro. *Jurnal Kesehatan Andalas*. Vol 4 (1)
- Ramandey, J.M., dan Pelipus Bunei. 2021. Identifikasi Tanaman Pegagan (*Centela asiatica* l.) Sebagai Tanaman Obat Bagi Masyarakat Suku di Distrik Tigi Timur Kabupaten Deiyai. *Jurnal Pertanian Dan Peternakan* 1, No. 1 (2021): 23–31
- Risnaji, D. 2011. Pengaruh pengatur waktu pemberian air minum yang berbeda temperatur terhadap performa ayam broiler. *Jurnal Sains Peternakan*(2): 77-81
- Rivai, H., Refilia Septika, dan Agusri Boestari. 2013. Karakterisasi ekstrak herba meniran (*Phyllanthus niruri* linn) dengan analisa fluoresens. *Jurnal Farmasi Higea*, Vol. 5, No. 2, 2013
- Saputra, H.P, Osfar, S, dan Irfan H. Djunaidi. 2015. Pengaruh Penambahan Fitbiotik Meniran (*Phyllanthus niruri* L) Dalam Pakan Terhadap Kecernaan Protein Kasar dan Energi Metabolis ayam Pedaging. *Laporan Penelitian. Universitas Brawijaya* hal. 3-4
- Siregar, R.A.P., Aisyah Nurmi, dan M. Hasibuan 2017. Pemberian Ekstrak Pegagan (*Centella asiatica*) Terhadap Performans Ayam Broiler. *Jurnal Peternakan*. Vol 1 No.2
- Syifaiah, 2008. Analisis Usaha Pemberian Ekstrak Pegagan pada Ayam Broiler. *Skripsi. Fakultas Sains dan Teknologi. Universitas Islam Negeri Malang*

- Sutardi, 2016. Kandungan bahan aktif tanaman pegagan dan khasiatnya untuk meningkatkan sistem imun tubuh. *Jurnal Litbang Pertanian*. Vol. 35. No. 3
- Wibowo AS, 2009, Efek Immunostimulan Ekstrak Meniran (*Phyllanthus niruri L*) secara in vivo pada Tikus (Immunostimulan Effect of Extract in vivo on Rat). *Jurnal Bahan Alam Indonesia*.