THESIS

EFFECTIVENESS OF MENIRAN (*Phyllanthus niruri* Linn) EXTRACT NANOPARTICLES ON FEED CONSUMPTION, BODY WEIGHT GAIN AND FEED CONVERSION RATIO OF BROILER CHICKEN

By

SYLVIA ANGGRAINI
SIN 06181133148

FACULTY OF VETERINARY MEDICINE
AIRLANGGA UNIVERSITY
SURABAYA

2022

EFFECTIVENESS OF MENIRAN (*Phyllanthus niruri* Linn) EXTRACT NANOPARTICLES ON FEED CONSUMPTION, BODY WEIGHT GAIN AND FEED CONVERSION RATIO OF BROILER CHICKEN

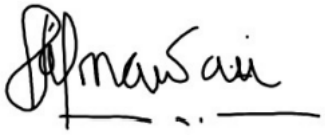
Thesis
Submitted in partial fulfilment of the requirement for degree of
Bachelor of Veterinary Medicine
at
Faculty of Veterinary Medicine, Universitas Airlangga

By

SYLVIA ANGGRAINI
SIN 061811133148

Approval of

Supervising Committee,



(Dr. Emy Koestanti Sabdoningrum, drh.,M.Kes) Supervisor

(Dr. Kadek Rachmawati, drh., M.Kes) Co-Supervisor

DECLARATION

Hereby, I declare that in this thesis entitled:

Effectiveness of Meniran (*Phyllanthus niruri* Linn) Extract Nanoparticles on Feed Consumption, Body Weight Gain and Feed Conversion Ratio of Broiler Chicken

there is no other work ever published to obtain a bachelor degree in certain university and to my knowledge there is also no work or opinion ever written or published by others, except those in writing referred to this paper and mentioned in the references.

Surabaya. May 26th 2022

Sylvia Anggraini
SIN 061811133148

Has been assessed in the Research Result Seminar
Date: April 25th 2022

RESEARCH RESULT SEMINAR ASSESSMENT COMMITTEE

Chief	: Prof. Dr. Ir. Sri Hidanah, MS
Secretary	: Dr. Rochmah Kurnijasanti, drh., M.Si.
Member	: Dr. Soeharsono, drh., M.Si.
Supervisor	: Dr. Emy Koestanti Sabdoningrum, drh., M.Kes.
Co-Supervisor	: Dr. Kadek Rachmawati, drh., M.Kes.

Has been assessed in Thesis Examination

Date: May 24th 2022

THESIS ASSESSMENT COMMITTEE

Chief : Prof. Dr. Ir. Sri Hidanah, MS

Member : Dr. Rochmah Kurnijasanti, drh., M.Si.

: Dr. Soeharsono, drh., M.Si.

: Dr. Emy Koestanti Sabdoningrum, drh., M.Kes.

: Dr. Kadek Rachmawati, drh., M.Kes.

Surabaya, May 26th 2022

Faculty of Veterinary Medicine

Universitas Airlangga

Dean,

Prof. Dr. Mirni Lamid, Drh., M.P.

NIP. 196201161992032001

SUMMARY

SYLVIA ANGGRAINI. Meniran (*Phyllanthus niruri* Linn) extract has potential as feed additive that plays role in supporting livestock productivity and health, but the absorption of plant extracts is generally not optimal due to the low solubility and bioavailability.

Nanoparticles cause an increase in surface area so the compounds are easily absorbed by cells. Good nutrient absorption leads to good feed use efficiency thereby reducing feed conversion ratio.

The purpose of this study was to determine the effect of meniran (*Phyllanthus niruri* Linn) extract nanoparticles on feed consumption, body weight gain and feed conversion ratio of broiler chicken. This research used Completely Randomized Design (CRD). A total of 400 broiler chickens were divided into 4 treatments with 10 repetitions each, each replication consisted of 10 chickens. *Cobb strain* broiler chickens reared from the age of 1 day (DOC) and at the age of 21 days were given treatment. The treatments in this research included: P0 group whom broiler chickens were not given meniran (*Phyllanthus niruri* Linn) extract nanoparticles, P1 group whom broiler chickens were given meniran (*Phyllanthus niruri* Linn) extract nanoparticles at 5% concentration, P2 group whom broiler chickens were given meniran (*Phyllanthus niruri* Linn) extract nanoparticles at 10% concentration, P3 group whom broiler chickens were given meniran (*Phyllanthus niruri* Linn) extract nanoparticles at 20% concentration. The data obtained were analyzed using ANOVA and continued with Duncan's Test.

The results showed that there were significant differences ($p<0,05$) between treatments on feed consumption. Feed consumption of P0 was significantly different from P1, P2 and P3. P1 was significantly different from P0, P2 and P3. P2 was significantly different from P0, P1 and P3. P3 was significantly different from P0, P1, and P2. On body weight gain showed significant differences ($P<0,05$). Body weight gain of P0 was significantly different from P1, P2 and P3. P1 was significantly different from P0, P2 and P3. P2 was significantly different from P0, P1 and P3. P3 was significantly different from P0, P1, and P2. Feed conversion ratio also showed significant differences ($p<0,05$) between treatments. Feed conversion ratio of P0 was significantly different from P1, P2 and P3. P1 was significantly different from P0, P2 and P3. P2 was significantly different from P0, P1 and P3. P3 was significantly different from P0, P1, and P2.

Based on the text above, it can be concluded that meniran (*Phyllanthus niruri* Linn) extract nanoparticles can increase feed consumption of broiler chicken at 5% concentration and also body weight gain of broiler chicken at 5%, 10% and 20% concentrations and decrease feed conversion ratio of broiler chicken at 5%, 10% and 20% concentrations.

Effectiveness of Meniran (*Phyllanthus niruri* Linn) Extract Nanoparticles on Feed Consumption, Body Weight Gain and Feed Conversion Ratio of Broiler Chicken

Sylvia Anggraini

ABSTRACT

Meniran contains phytochemical compounds that are efficacious for productivity, but have poor solubility and bioavailability so the absorption is not optimal. Manufacture of meniran extract in form of nanoparticles allows better absorption of phytochemical compounds so the productivity of broiler chickens increases. This research was conducted to determine the effectiveness of meniran extract nanoparticles on feed consumption, body weight gain and feed conversion ratio of broiler chicken. This research was conducted using Completely Randomized Design by divided 400 broiler chickens into 4 treatments, each treatment consisted of 10 repetitions and each repetition consisted of 10 broiler chickens. The treatment groups consisted of: P0 (chickens were not given meniran extract nanoparticles), P1 (given meniran extract nanoparticles at 5% concentration), P2 (given meniran extract nanoparticles at 10% concentration) and P3 (given meniran extract nanoparticles at 20% concentration). Data in the form of feed consumption, body weight gain and feed conversion ratio were then analyzed using ANOVA and continued with Duncan's test. Data analysis showed that the administration of meniran extract nanoparticles had significant effects ($p < 0.05$). The best result on feed consumption was shown by P1, on body weight gain by P1 and on feed conversion ratio by P2. This research show that meniran extract nanoparticles can increase feed consumption at 5% concentration and also body weight gain at 5%, 10% and 20% concentrations and decrease feed conversion ratio at 5%, 10% and 20% concentrations.

Key words **:** meniran extract nanoparticles, feed consumption, body weight gain, feed conversion ratio, broiler chicken

ACKNOWLEDGEMENTS

Praise the presence of Allah SWT for the blessings that have been bestowed so that the author can conducted research and complete the thesis entitled **Effectiveness of Meniran (*Phyllanthus niruri* Linn) Extract Nanoparticles on Feed Consumption, Body Weight Gain and Feed Conversion Ratio of Broiler Chicken.**

Writing a thesis is an obligation and partial fulfilment of the requirement for undergraduate students in the Faculty of Veterinary Medicine in completing their Veterinary Education at the Faculty of Veterinary Medicine, Airlangga University. On this occasion the author would like to express her gratitude to:

1. The Dean of the Faculty of Veterinary Medicine, Airlangga University, Surabaya Prof. Dr. Mirni Lamid, drh., MP. for the opportunity to attend education at the Faculty of Veterinary Medicine, Airlangga University.
2. Dr. Emy Koestanti Sabdoningrum, drh., M.Kes as main supervisor, research supervisor and guardian lecturer for the guidance, support, motivation, and constructive suggestions so this thesis can be completed properly.
3. Dr. Kadek Rachmawati, drh., M.Kes as co-supervisor who has guided wholeheartedly in writing this thesis and has always provided support for the author.
4. Prof. Dr. Ir. Sri Hidanah, MS as chief examiner, Dr. Rochmah Kurnijasanti, drh., M.Si. as examiner secretary and Dr. Soeharsono, drh., M.Si. as examiner member for their willingness to spend their time to test

and evaluate this thesis as well as guidance, motivation and suggestions that are very useful for the author.

5. All teaching lecturers and staff as well as employees of Faculty of Veterinary Medicine, Airlangga University for the useful knowledge, experiences and all forms of assistance during the author's education
6. The author's parents, father Alm. Hari Basuki and beloved mother, Siti Aisyah Idawati, who always provide support, encouragement, attention, affection and sincere prayers to the author so the completion of this thesis run smoothly.
7. The author's two brothers, Ongky Hidayat Pratama Putra and M. Nizar Dwiputranto, the author's sister-in-law Rominah and the beloved niece M. Hafidzhan Asyhab who have provided support, encouragement, advice and sincere prayers.
8. Friends of author Angling, Theresia, Naufal, Citra, Tasya and Mira who always provide support, help, encouragement and are always there for author.
9. Mesophoyx FKH UNAIR colleagues class 2018 thank you for the help, encouragement and support so far.

Author realizes that there are still shortcomings in this thesis, for that the author asks for criticism and suggestions for improvement in the future.

Surabaya, May 26th 2022

Author

TABLE OF CONTENT

TABLE LIST

FIGURE LIST

ATTACHMENT LIST

ABBREVIATION AND MEANING OF SYMBOL

cm = centimeter

CRD = Completely Randomized Design

EMA = European Medicines Agency

et al. = et alia

FCR = Feed Conversion Ratio

g = gram

iu = international unit

Kcal = Kilocalories

Kg = Kilogram

mcg = microgram

M.E = metabolism energy

mg = milligram

ml = milliliter

nm = Nanometer

ppb = *part per billion*