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PROCEEDING

International Seminar

THE ROLE OF VETERINARY SCIENCE

TO SUPPORT MILLENNIUM DEVELOPMENT GOALS

and

THE 12th ASIAN ASSOCIATION OF VETERINARY SCHOOLS CONGRESS



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UNIVERSITAS AIRLANGGA

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VETERINARY SCHOOLS CONGRESS
JW MARRIOTT HOTEL, SURABAYA-INDONESIA
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REMARKS OF ORGANIZING COMMITTEE THE ROLE OF VETERINARY SCIENCE TO SUPPORT MILENIUM DEVELOPMENT GOALS

Dr. Dadik Raharjo, M.Kes, DVM.
Chairman

Ladies and Gentleman,
I have the honour of welcome delegates and speakers in International Seminar with the title "role of veterinary science to support milenium development goals" and highest ours appreciation for Your participation on this seminar.

The seminar will exchange information that we can carefully increasing the role of veterinary science to support development goals. Hopefully through this event will take advantage of the many opportunities to colloborative work between indonesia instituion and also with overseas institution.

On behalf of Organizing committe, I would like to express our sincere gratitude and thanks to all participant at this seminar international.

I hope that this program will be useful and enjoy during stay in Surabaya.

Best Regards



REMARK OF DEAN FACULTY OF VETERINARY MEDICINE UNIVERSITAS AIRLANGGA AAVS PRESIDENT

Prof. Romziah Sidik, Ph.D., DVM.

Bismillahi rochmanir rochim,
Assalamu'alaikum warochmatullahi wabarokatu.

Good morning Ladies and Gentlemen,
Welcome to Surabaya, East Java – Indonesia.

On behalf Faculty of Veterinary Medicine, Universitas Airlangga and Asian Association of Veterinary Schools, I would like to say thank you for the Excellencies: Rector Universitas Airlangga, The Director General of Livestock and Animal Health-Ministry of Agriculture-Republic of Indonesia: Ir. Syukur Iwantoro, MS), The Coordinating Minister for people's Welfare Republic of Indonesia: Dr. Agung Laksono; The OIE Sub Regional Representation for South-East-Asia delegates (Dr. Dirk Van Aken, Dr. Mary Joy Gordoncillo, Dr. Ronello Abila and Ms.Melada Ruengjumroonnath), the Presidents of SEAVSA (Dr. Srihadi agung Priyono) President of IVSA (Indonesian Veterinary School Association): Prof. Made Dhamriyasa, and all Deans of SEAVSA (South-East Asia Veterinary School Association) members, AAVS (Asian Association of Veterinary Schools: Japan, Korea, Taiwan, Indonesia, Malaysia, Thailand, Philippines, Mongolia, Vietnam, Myanmar, Lao and Cambodia) and IVSA (Indonesian Veterinary School Association), The President of Indonesia Veterinary Medicine Association: DVM.Wiwiek Bagja), Quarantine and Inspection Agency Commissioner of Korea: Prof Yong Ho Park), Secretary General and Asian Society of Zoo and Wild Life Medicine: Dr. Kimmura Junpei; All the invite speakers comes from: Faculty of Medicine, Faculty of Veterinary Medicine and Tropical Disease Center of Universitas Airlangga, Feed Technology and Nutrition, Research Institute for Animal Production,-Indonesia, College of Veterinary Medicine Murdoch University, Division of Molecular Medicine and medical Genetic, Department of Pathology, Kobe University, Universiti Putra Malaysia, Graduate School of Agricultural and life Sciences University of Tokyo Japan;

The honorable of all presenter and participants, also the sponsorships who are joint in the International Seminar with the themes: "The Role of Veterinary Science to Support Millennium Development Goals and the 12th Asian Association of Veterinary Schools Congress" during 2 days (5th-6th September 2013), which is Faculty of Veterinary Medicine of Universitas Airlangga as the hosted of the event.

Ladies and Gentlemen,

About 193 United Nation member states and at least 23 international organizations declared Millennium Development Goals (MDGs), and they have agreed to achieve the nine MDGs such as: eradicating extreme poverty and hunger, universal primary education, promoting gender quality, and empowering women, reducing child mortality rates, improving maternal health, combating HIV /AIDS, malaria and other diseases, ensuring environmental sustainability, and developing a global partnership for development.

Animal diseases which form an epizootic (Apthae epizootic, mad cows diseases) and or zoonotic like Avian Flu, SARS (Severe Acute Respiratory Syndrome), Salmonellosis, Brucellosis, tuberculosis, rabies are threat to global security warned by Director General of the Word Organization as well as World Animal Health Organization (OIE). These diseases have potentially disastrous consequences if it's not eliminates at their primary source. As we know that about systemic review of 1,415 pathogens are known about 61% infects humans.

To combat and fighting zoonosis diseases, Indonesia has launching the National Commission of Zoonosis Control under Coordinator Minister for people's Welfare Republic of Indonesia.

So, the Veterinary Medicine Schools in Asian country has responsibility to provide some courses in the curricula to achieve Day one competencies. Four pillars could be strengthening by Veterinary School such as: education system, research, public extension and or services, and collaborations. The quality assurance should be guaranteed by each Veterinary Schools. In the event of AAVS congress programs to produce and launch the Logo of AAVS, and the consequence to be added the logo profile and philosophy in AAVS by Law. The other program is to perform Veterinary school curricula and gap analysis. Therefore, Veterinary school curricula in Asian country could be standardized.

On behalf Organizing Committee, I would like to say thank you to Director Research and Public Community Services Board of Directorate General of Higher Education, Ministry Education and Culture Republic of Indonesia, The OIE SRR SEA, Faculty of Veterinary Medicine Universitas Airlangga, IVSA, and the sponsorships from veterinary industries for supporting finance that the event become perform by successfully.

Ladies and Gentlemen,

Again, I would like to say thank you for your participative to the event, and please follow and enjoy the programs as well as your visit in Surabaya by happiness.

Billahi taufik wal hidayah, Wassalamu'alaikum warohmatullahi wa barokatu.



REMARKS OF RECTOR OF UNIVERSITAS AIRLANGGA

Prof. Dr. H. Fasich, Apt.

Assalamu'alaikum Warahmatullahi Wabarakatuh

First of all, let us pray to Allah SWT that because of His blessings we are able to be here in this very important event.

Secondly, I would like to say to all participants: Welcome to Surabaya, East Java, Indonesia! It is indeed a great honour for me to have the opportunity to be among the participants of this very special occasion, where all of us are going to have in-depth discussion about a very important and interesting topic closely related to veterinary science and the millennium development goals as a way to increase the quality of human health.

Indonesia's Millennium Development Goals (MDGs) are based on the eight international development goals that were officially established following the Millennium Summit of the United Nations in 2000, one of touches on the effort to combat wide-spread diseases such as HIV/AIDS and diseases transmitted by animals such as malaria, avian flu, swine flu, and so forth, which could be a serious threat to global security and human development.

Therefore, concerns over these MDGs from the point of view of veterinary science, especially among the researchers, have to be raised these day. There are numerous recent for conducting scientific research and other scientific activities to bring the MDGs to a success.

In this very special event, I would like to express my deepest appreciation to all members Asian Association of Veterinary Schools for their success in conducting better and better collaborations. Such collaborations are a pre-requisite for all efforts in improving performances, including the standardization of veterinary curricula in the ASEAN region and among Asian countries, in controlling the spread of zoonosis, and in developing and improving bio safety, bio security, surveillance, animal health and animal production.

I strongly believe and hope that this seminar and congress will be able to strengthen the existing networks that occurred among all the members of the association, as the main step in the eradication and prevention of infectious diseases, especially once that are related to animals, to support the Millennium Development Goals.

To all participants, I would like to thank you very much for coming to this forum. And to the organizing committee, I would like to give my sincerest appreciation for their wonderful job and hardwork in organizing this event.

I hope the seminar and the congress will be fruitful to all of use and lastly, please enjoy your stay in Surabaya.

Thank you very much,

Wassalammu'alaikum warahmatullahi Wabarakatuh.

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PROTEIN UTILIZATION OF SPIRULINA IN RESPONSE TO PROTEIN EFFICIENCY RATIO IN LAYING HENS

Widya Paramita Lokapirnasari

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ABSTRACT

High Quality Feed (HQF) is a formula feed comprising the feed material that has high quality. Purpose this research is to find a formula HQF that can be applied and can be widely used in laying chicken farms, primarily related to the case of Highly disease Pathogenic Avian Influenza (HPAI) that can reduce economic losses due to morbidity and high mortality. Because handling unfinished AI through vaccination, is expected by the HQF can help boost the immune system of poultry. In this stage developed feed formulations that contain ricebran fermentation with the best nutrient content, the building block of concentrates and Spirulina as immunomodulatory, this stage aims to determine the effect of HQF formula tested on chickens Isa Brown laying strain to determine the effect of the growth performance by calculating the feed conversion ratio. The aim of this research was to investigate effects of fermented ricebran to evaluate the protein efficiency ratio of layer chicken by in- vivo method. Material research were: chicken layer Isa Brown strain, feed stuff: maize, extracted soybean, fishmeal, methionin, premix vitamin, premix mineral, DCP, L-Lysin, oil, non fermented ricebran, fermented ricebran, feed additive. Eight different feed formulation are: control/P₀(crude protein(CP):18.14%, P₁ (CP: 18.34%), P₂(CP: 18.54%), P₃(CP: 18.74%), P₄(CP: 18.41%), P₅(CP: 18.61%), P₆(CP: 18.81%), P₇ (CP: 19.00%). The result of research showed that P₀ was different significantly (p<0.05) in protein efficiency ratio of layer chicken by in- vivo method. The highest protein efficiency ratio was P₇ (2.83).

Keywords: protein efficiency ratio, fermented ricebran, spirulina, layer chicken

INTRODUCTION

Spirulina is a cyanobacterium that can be consumed by humans and animals and is made primarily from two species of cyanobacteria: *Arthrospira platensis* and *Arthrospira maxima*. *Arthrospira* is cultivated worldwide; used as a dietary supplement as well as a whole food; and is available in tablet, flake and powder form. It is also used as a feed supplement in the aquaculture, aquarium and poultry industries (Vonshak, 1997).

Dried spirulina contains about 60% (51-71%) protein. It is a complete protein containing all essential amino acids, though with reduced amounts of methionine, cysteine and lysine when compared to the proteins of meat, eggs and milk. It is, however, superior to typical plant protein, such as that from legumes (Ciferri, 1983; Babadzhanov, 2004). The U.S. National Library of Medicine stated that

spirulina was no better than milk or meat as a protein source, and was approximately 30 times more expensive per gram.

Spirulina's lipid content is about 7% by weight, and is rich in gamma-linolenic acid (GLA), and also provides alpha-linolenic acid (ALA), linoleic acid (LA), stearidonic acid (SDA), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) and arachidonic acid (AA). Spirulina contains vitamins B₁ (thiamine), B₂ (riboflavin), B₃ (nicotinamide), B₆ (pyridoxine), B₉ (folic acid), vitamin C, vitamin D, vitamin A and vitamin E. (Babadzhanov, 2004; Tokusoglu, 2003). It is also a source of potassium, calcium, chromium, copper, iron, magnesium, manganese, phosphorus, selenium, sodium and zinc. Spirulina contains many pigments which may be beneficial and bioavailable, including beta carotene, zeaxanthin, chloro-

phylla, xanthophyll, echinenone, myxoxanthophyll, canthaxanthin, diatoxanthin, 3'hydroxyechinenone, beta-cryptoxanthin and oscillaxanthin, plus the phycobiliproteins c-phycoyanin and allophycocyanin (Vonshak, 1997).

MATERIALS AND METHODS

Chicken that has just arrived given water sugar, then kept for adaptation for a week. On the day to eight until the end of research, animals try given treatment. Feeding and drink given ad libitum. The act of vaccination use vaccine avian influenza inaktif type H5N1 performed on first week then will be booster on third week. The dose of vaccine was 0,5 ml / chickens by intramuscular. This research consists of 8 levels of treatment: control/P₀(crude protein (CP):18.14%, P₁ (CP: 18.34%), P₂(CP: 18.54%), P₃(CP: 18.74%), P₄(CP: 18.41%), P₅(CP: 18.61%), P₆(CP: 18.81%), P₇ (CP: 19.00%). The PER value was calculated as BW gain (grams) divided by CP intake (grams)

RESULTS AND DISCUSSION

Evaluation of protein quality of animal protein sources by integrative methods such as protein efficiency ratio (PER), present some information on probably heat damage in during processing and availability of amino acids in tissue level for birds (Sahraei, 2012). The results of the PER assays is shown in Table 1.

Based on the results of the analysis of variance that the addition of Spirulina showed a significant difference ($p < 0,05$) of average Protein Efficiency Ratio. The Duncan multiple range test showed that treatment which produces the lowest amount of Protein Efficiency Ratio obtained at the treatment P₀ (Spirulina 0%) which is different from other treatments.

Table 1. Average of Protein Efficiency Ratio

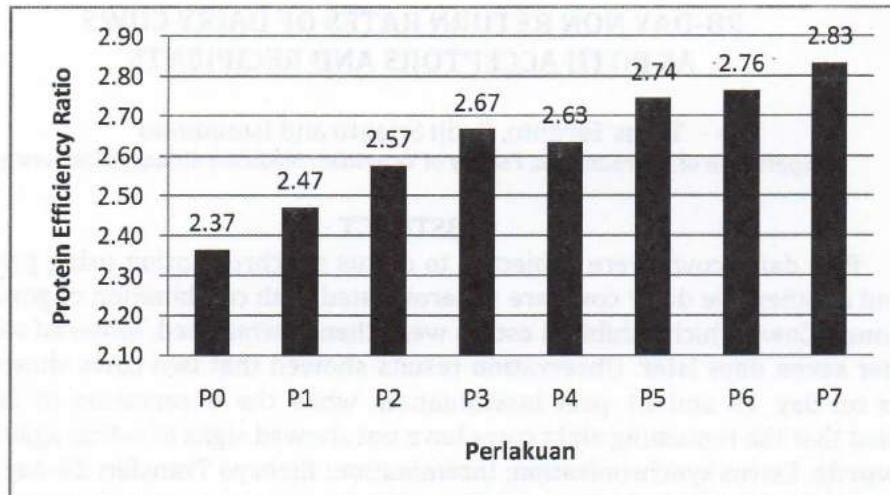
Treatment	Average of Protein Efficiency Ratio
P7	2.83 ^a
P6	2.76 ^{ab}
P5	2.74 ^{ab}
P3	2.63 ^{ab}
P4	2.67 ^{ab}
P2	2.57 ^{ab}
P1	2.47 ^{ab}
P0	2.37 ^b

Within column, numbers with ^{a,b} are significantly different between treatment ($p < 0.05$).

The treatment feed formula contains Spirulina with 58% protein content and amino acids are quite balanced. The addition of Spirulina 0.5%, 1%, and 1.5% in the formula of rations the treatments provide value increase in protein content of the feed. In General, vegetable protein deficiency in plants due to this protein are usually bound with other compounds such as lignoselulosa that are difficult to digest or toxic compounds such as tannins, which will lower the value of the digestibility of the protein. On the cell walls of Spirulina, made from a compound of mucoprotein and lignoselulosa. On algae is also not found in other compounds that complicate digestion (Angka dan Suhartono 2000), so that the feed formula treatment easier to digest by poultry.

CONCLUSIONS

In conclusion, the results of this study indicated that phytase supplementation improved the protein efficiency ratio of chicken fed diets containing Spirulina 1.5% in the formula of rations with crude protein content on diet 19.00% (P₇).



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