International Journal of Multidisciplinary Approach and Studies

ISSN NO:: 2348 – 537X

Productivy of Broiler Chickens under Ration Supplemented with Minerals Available in *AGNIHOTRA* Ash

Wayan SayangYupardhi*, I Dewa Ketu T Harya Putra, Nyoman Suparta***, Ni Wayan TatikInggriati****, & Ni Wayan Siti*******

Faculty of Animal Science, Udayana University, Bali

ABSTRACT

The present research work was aimed to study the productivity of broiler chickens after being raised with ration containing minerals available in Agnihotra ash..A completely randomized design was applied with 4 treatments and 4 replications consisting each of 5 day old chicks.The treatments were as follows. Group A or control group was chickens fed with 100% commercial ration, Group B: fed with 100% ration + 0.1% Agnihotra ash, Group C: fed with 100% ration + 0.2% Agnihotra ash, and Group D: fed with 100% ration + 0.3% Agnihotra ash.

The variables recorded and thenanalyzed at the end of experimentwerefeedconsumption, weeklybody weight, average body weight gain, feed conversion ratio, meatorganoleptic, bloodclinicalchemistry, hematology, meatchemistry, meatphysicalquality, and meat commercial cut.The presentresultsshowedthatwith the exception for the lipid content of the whole body, all the variables assessed as mentionedabovedid not differsignificantly ($P > 0.05$). Distribution of lipid for chickens in Group B, C, and D seemed to lower ($P < 0.05$) whencompared to Group A. In addition to the above results, from statistical analyses of income point of view, it was found that financial gain from Group A was Rp. 255.161.80/ 20 chickens, Group B: Rp. 242.355.80/ 20 chickens, Group C: Rp. Rp. 221.662.20/ 20 chickens, and Group D: Rp. 170.566.00/ 20 chickens. Thus, the highest financial gain was obtained from chickens in Group A and the lowest from chickens in Group D.

Based on the above results, it can be concluded that supplementation of 0.1% to 0.3% of Agnihotra ash in commercial ration fed to broiler chickens did not result in increase productivity of the birds.

Keywords: *Agnihotra ash, broiler chickens, growth rate, carcass quality, FCR, financial analysis*

INTRODUCTION

*Agnihotra*is an ancient Hindu ritual. This ancient ritual has been practiced in Bali during the era of King Waturenggong in the 16th century (Yupardhi 2016 a), but for certain reason it was banned until recently (Suja, 2010).*Agnihotra*ritual has been putin practice againin Bali since 1990's. Recently, more and more people in Bali conduct this ancient Hindu ritual and, therefore, *Agnihotra* ash as the waste product of the ritual is available in abundance. In principle, in regard towaste products that are produced from various people activities, the wastes should be recycled or used whenever possible and not merely to be discarded. That is

also the case for *Agnihotra* ash; such waste should not be disposed directly and, thus, be utilized for various purposes. The use of waste products resulted from the agricultural sectors for growth and performance of livestock farming has become subjects of research works conducted by our colleagues (Mariani and Suryani, 2004; Bidura and Mahardika, 2005; Sudiastra*et al*., 2002).

Concerning utilization of *Agnihotra* ash, in Peru – South America and in other countries, the ash has been used for improving human health status, spritual balancing of the atmosfer, and increasing land fertility (Ganesan, 2002). So far, very few comments stated on the effect of utilization of *Agnihotra* ash by people in Bali and also only a few scientific articles have been published in the local or international journals. As stated by Ni PutuTirtawati (Pers. Com., June 23rd, 2016), some farmers in Bali visited her in order to get *Agnihotra* ash. The farmers used the ash to fertilize their rice field and also were applied to coconut seedling in order to protect it from a certain type of animal (*landak* – local name). They reported that their yield of rice has increased almost three times following *Agnihotra* ash application when compared to those receiving no ash. Likewise, the coconut seedlings were saved from animal destruction and, thus, grow properly. Such cases were reported by farmer from Karangasem, Bali. Similar positive result obtained from utilization of *Agnihotra*ash was also reported by a farmer in Luwuk, Sulawesi who used *Agnihotra* ash to fertilize his fruit plants (*jambu* – local name). He found that the plant produced more fruit with bigger size and sweeter compared to those before the ash fertilization (W. Jendra, Pers. Com., April17th, 2014).

From scientific point of view, laboratory analysis of *Agnihotra* ash conducted by Yupardhiet al. (2016 b) indicated that the mineral contents of the ash include phosphorus (P): 12629 mg/kg; calcium (Ca): 10.017 mg/kg; zinc (Zn): 82.212 mg/kg; and iron (Fe): 16.225 mg/kg. It has been widely known that minerals are needed by living organism (animals in this case) for various important function of the body, such as for growth rate, meat, milk, egg, and wool productions, reproductive performance, and so forth. So, regarding the positive effect of application of *Agnihotra* ash as reported above, scientific finding is needed to confirm such positive effects.

Since *Agnihotra* ash is waste product of a particularly spiritual occasion or ritual, some people believe that the ash is spiritually filled with sacred Hindu "*mantra*" chanted during the actual course of the *Agnihotra*ritual (Mantra, 1989). According to Jendra and Titib (1999), when the *Agnihotra* ritual is conducted as proper as possible and also with fully appreciation, then upon the application of the ash to agricultural sectors such as livestock farming, improvement in their productivity may be obtained. In relation to the "mantra content" of *Agnihotra* ash, it has been stated that incorrect chanting of the mantra during the ritual may result in bad consequences; it may not give optimum benefit as mentioned above and also may lead to negative impact on the chanting people themselves (Patanjali Muni in Wibawa, 2007).

Previous study of Yupardhi*et al*. (2016 b) showed that addition of *A`gnihotra* ash in drinking water given to broiler chickens have resulted in a tendency of increasing income of chicken farmers, from the hypothetical application of the experimental results at the level of community point of view. Thus, the results reported in this article is a kind of further confirmation on effect of application of *Agnihotra* ash to broiler chickens by giving the same dose of ash in the ration rather than in the drinking water.

MATERIALS AND METHODS

The current research work on application of *Agnihotra* ash to broiler chickens was conducted for 5 weeks (17th January – 21st February 2017). A number of day-old chicks (DOC CP 707) were kept in battery colony pens. The birds were fed with commercial ration produced by PT. Charoen Pokphand and supplied *ad libitum* with tap water.

A completely randomized design (CRD) was applied with 4 treatments and 4 replications in each treatment. Each replication consisted of 5 chicks at homogeny weight. The four treatments were: Group A as control that was birds receiving 100% commercial feed as basic ration, Group B those receiving basic ration + 0.1 % *Agnihotra* ash, Group C those receiving basic ration + 0.2% ash and Group C those receiving basic ration + 0.3 % ash. As mentioned previously, the *Agnihotra* ash was mixed in the ration.

All animals were weighted every week to obtain data on body weight and body weight gain. At the end of experiment, 20% of birds from each treatment were sampled and slaughtered in order to get data on hematology and clinical chemistry that was then analyzed at the proper laboratory. Disection of the carcass was conducted by following USDA technique 1977 whereas for body fat and blood cholesterol assessment, they followed the technique reported by Kubena et al. (1974) and Lieberman-Burchad (1977), respectively.

RESULTS AND DISCUSSION

At the end of experiment, various results obtained were presented in the following tables (Table 1 and Table 2)

Table 1 Productivity of broiler chickens after fed with commercial ration supplemented with *Agnihotra* ash at different concentrations

Variable	Treatments				SEM (3)
	A (1)	B	C	D	
Initial weight (g/head)	42,90a (2)	42,60a	43,3a	42,40a	0,21
Final weight (g/head)	1811,85a	1778,15a	1931,638a	1880,50a	55,15
Feed consumption (g/head)	3004,84a	2911,50a	3050,57a	3047,40a	141,76
Body weight gain (g/head)	1768,95a	1735,55a	1888,38a	1838,1a	178,48
Feed conversion ratio (FCR)	1,69a	1,67a	1,61a	1,66a	0.18
Meat organoleptic assessment:					
Colour	3.067a	3.267a	3.133a	3.133a	0.180
Smell	3.067a	3.200a	3.200a	3.067a	0.122
Texture	3.133a	3.267a	3.600a	2.733a	0.227
Overall acceptance	3.400a	3.600a	3.400a	2.933a	2.118
Fat distribution					
Fat pad (g)	5.22 c	6,61 bc	8,10 ab	8,88 a	0,553
Gut fat (mesenterium) (g)	5,23 a	3,98 a	3,42 a	3,27 a	0,783
Gizzard fat (g)	13,25 a	8,70 ab	4,06 b	5,17 b	1,585
Abdominal fat (g)	23,71 a	18,90 ab	16,37 b	16,55 b	1,967

Blood clinical chemistry:					
Total cholesterol (mg/dl)	132.00 a	124,25 a	127,00 a	139,25 a	9,009
Trigliseride (mg/dl)	34,25 a	26,50 a	19,75 a	26,25 a	3,621
HDL (mg/dl)	104,00 a	103,25 a	110,25 a	119,25 a	7,903
LDL (mg/dl)	32,25 a	26,00 a	32,25 a	30,00 a	3,920
Hematology:					
Hb (g/dl)	11,75 a	8,20 a	10,925 a	11,30 a	1,184
Leucosite (g/dl)	143,45 a	103,45 a	138,52 a	134,60 a	15,990
Platelet (g/dl)	20,25 a	19,50 a	25,75 a	29,50 a	3,161
Eritrosite (g/dl)	2,625 a	1,830 a	2,557 a	2,590 a	0,277
Meat chemical:					
Ashcontent (%)	3,6797 a	3,6 831 a	3,6864a	3,7386a	0,10
Fat content (%)	5,8393a	6,0634a	6,0130a	5,4631a	0,490
Protein content (%)	29,1165a	27,03 a	28,83 a	27,46 a	0,771
Meat physical quality:					
Water content (%)	75,00 a	74,25 a	74,50 a	73,25 a	1,066
Cooking lost (%)	67,957 a	63,330 a	64,982 a	66,752 a	1,522
Water holding capacity (%)	36,725 a	32,652 a	32,485 a	37,285 a	2,164
Row decreasion (%)	62,902 a	63,802 a	61,258 a	65,798 a	1,587
pH	5,60 a	5,75 a	5,80 a	5,70 a	0,069
Commercial cut of carcass:					
Upper thigh (g)	260,00a	200,00a	207,00a	197,50a	17,45
Lower thigh (g)	167,00a	164,00a	174,50a	169,50a	13,44
Wing weight (g)	128,50a	136,50a	129,50a	132,00a	6,97
Chest weight (g)	579,50a	535,25a	576,50a	534,50a	26,41
Back weight (g)	265,25a	270,00a	265,00a	297,50a	19,95

Note:

(1). Treatment A = basic ration without *Agnihotra*ash, B = basic ration + 0.1% *Agnihotra* ash, C = basic ration + 0.2% *Agnihotra* ashand D = basic ration + 0.3% *Agnihotra*ash.

(2) The same letter at the same row indicates a non-significant difference (P > 0.05)

(3). SEM = Standard Error of the Treatment Means

Table 2 Hypothetical implication of addition of Agnihotra ash in broilerckickenration on income of chickenfarmers and on the return cost ratio thatwasanalyzed at the termination of the experiment

Variable	Treatments			
	A	B	C	D
Income of farmers (Rp./20 chickens)	255.161,80	242.355,80	221.662,20	170.566,00
R/C (Return Cost Ratio)	1,59	1,56	1,49	1,30

Data presented in Table 1 indicated that the various parameter as sessed, i.e. feed consumption, final body weight, body weight gain, FCR, meatorganoleptic, blood clinical chemistry, hematology, meatchemistry, meatphysical quality and commercial cut of the carcass did not differ significantly ($P > 0.05$) among the four treatments. Exception was on the fat content; Treatment A has the significantly highest gizzard and abdominal fats compared to the rest of treatment. It can be assumed that the commercial Charoen Pokphan511 ration has already contained a suitable amount of various minerals needed for proper growth of broiler chickens. More over, the present results are in accordance with our previous finding (Yupardhi*et al.*, 2016 b); addition of *Agnihotra*ash at the same doses (0.1 to 0.3%) into the drinking water of broiler chickens did not significantly result in positive effect on the various parameter observed. Thus, from these two experiments point of view, supplementation of *Agnihotra* ash through drinking water or mixed in the ration did not significantly improve productivity of the broiler chickens.

From spiritual point of view, it is believed that the *Agnihotra* ash is filled with sacred Hindu mantras that were chanted during the actual course of the *Agnihotra*ritual (Mantra, 1999). Thus, the positive effect obtained from application of Agnihotra ash as reported or stated by some people (Ganesan, 2002 ; Jendra pers. com., 2014 ; Tirtawati pers. com., 2016) may berelated to the sacred mantras contained in the ash. More over, asstated by Jendra and Titib (1989), when the *Agnihotra*ritual is performed as proper as possible and withfully appreciation, upon the application of the ash for various purposes, beneficial effect may be obtained. Further more, the incorrect chanting of the sacred mantras during the ritual may lead to undesirable consequences; it may not give optimum benefit as found by other peoples or even may lead to negative impact on the chanted people themself (Patanjali Muni,in Wibawa, 2007).

As presented in Table 2 about implication of addition of *Agnihotra*ash on chicken farmers in comes and on return-cost ratio, upon the hypothetical application of the presentresults at the level of community, no significant differences on those parameters were noted. When compared to our previous results (Yupardhi, et al., 2016b), the current finding sindicate a different conclusion.

CONCLUSION AND SUGGESTIONS

From the above results and discussion, it can be concluded that productivity of broiler chickens showed no significant improvement following application of 0.1 to 0.3% *Agnihotra*ash in the commercial ration fed to broiler chickens. It appears that the present results are inccordance with our previous research work in which the ash was added into the drinking water. As the hypotheticalanalysis of incomegained by the chicken farmers showed a diffrenet conclusion when compared to our previous research work, then further research work on utilization of waste product obtained during the actual course of *Agnihotra* – an old Hindusacredritual, should be carried out by, for example, increasing dose of the ashtreatment, different methods of application of the ash, incresed number of experimental animals and so forth.

ACKNOWLEDGEMENT

The authors wish to thank Rector of Udayana University, Prof. Dr.dr. K. Swastika, Sp.PD, KEMD, Dean of Faculty of Animl Science, and Head of Research and Community Service Department of Udayana University for their financial support and facilities provided. Similar appreciationisal so passed to those that make this reserch work possible.

REFFERENCES

i. Bidura, I G. N. G., Mahardika I G. 2005. PenggunaanTepungJeramiBawangPutih (Allium sativum) dalamRansumterhadapBobotdanKomposisiFisikKarkasItik. PajalahIlmiahPeternakan 3 (3): pp. 67-71..

ii. Ganesan, P.C. 2002. *Agnihotra for Health, Wealth and Happiness. First Edition*.ISBN: 81-7478-304-0. Chenmoi. Bangalor. Kolkata: SuraBooks (Pvt).

iii. Jendra, I W. and Titib, I M. 1999. *Agnihotra*Raja UpacaraMultifungsidanEfektif. Denpasar: Bali *HomaYajna*.

iv. Mantra, I.B. 1989. *Bhagawad Gita* (Alih Bahasa danPenjelasan). ProyekPenyuluhandanPenerbitanBuku Agama. Pemda Tingkat I Bali.

v. Mariani, N.P. danSuryani, N.N. 2004. PengaruhPenggunaanKulitBijiCoklat yang DisuplementasiRagidalamRansumterhadapJumlah*Pad Fat*dan Kadar KolesterolDagingItik Bali. MajalahIlmiahPeternakan 7 (2): pp. 64-69.

vi. Suasdiastra, I W., Putra, I G., Sutrisna, I.B. 2002. PenambahanSerbukGergajiKayu, Ragi Tempe, danKombinasinyadalamRansum Basal terhadapDistribusiLemakTubuhAyamPedaging. MajalahIlmiahPeternakan 9 (3): pp. 94-101.

vii. Suja, I W. 2010. *Ritual Veda HomaTattwaJnana*. ISBN: 978-602-204-112-2. Paramita, Surabaya.

viii. Wibawa, M. A. 2007. KedahsyatanAgnihotraYajnaSuci yang Terlupakan. Denpasar: PT EmpatWarnaKomuinikasi.

ix. Yupardhi, W.S. 2016 a. Upacara*Agnihotra*padaMasyarakat Hindu Bali (SuatuKasus) di JeroGedeKetewel, KecamatanSukawati, KabupatenGianyar. Disertasi, IHDN Denpasar.

x. Yupardhi, W.S., Suparta, N., Harya Putra, I D K., Inggriati, N. W. T., Suarta, I G. 2016 b. *The Effect of Addition in Drinking Water of Agnihotra Ash on Growth Rate and Meat Quality of Broiler Chicken. Internatiomal Journal of Multidisciplinary Approach and Studied*. ISSN NO: 2348 – 537X. Vol. 04, No. 1, Jan – Feb 2017. pp. 13 - 21