Study on the effect of *Andrographis Paniculata* Wall. ex Nees on Cocidiosis on Broiler Performance and mortality in Phichit Province, Thailand.

Naiyana Tipakorn[1], Wandee Tatrakoon[2], Grete Thinggaard[3] and Udo ter Meulen[4]

[1]Phichit College of Agriculture and Technology, Sam-ngam, Phichit 66140. Institute of Animal Physiology and Animal Nutrition, Goettingen University, 37077 Goettingen, Germany, E-mail: ntipakorn@hotmail.com
Department of Animal Science, Faculty of Agriculture, Chiang Mai University, Chiang Mai, Thailand
E-mail: twandee@hotmail.com
[34] Institute of Animal Physiology and Animal Nutrition, Goettingen University, 37077 Goettingen, Germany, E-mail: umeulen@uni-goettingen.de

Abstract: A study was conducted to compare broiler performance by two rearing methods (with and without *Andrographis paniculata*) in Phichit province of Thailand. Under a Completely Randomized Design, 105 broilers were randomly divided into 5 groups. All groups were raised in coops on deep litter under Station management for 6 weeks during February – March, 2001. All chicken were fed with a basal diet of formulated feed mix added *A. Paniculata* leaf meal supplement at different levels: 0% (control group without *A. Paniculata*), 0.1%, 0.2%, 0.3% and 0.4% of *A. paniculata*. Average daily weight gain (ADG), feed conversion ratio (FCR) and mortality were measured for each group. Every 2 weeks blood samples were collected and analysed for glucose, albumin and globulin. As the chicken reached three weeks of age coccidia were spread to the bedding. After 1 week the faeces was checked and cocidia found in every group. After 6 weeks the chicks were slaughtered, the intestines collected and diagnosis for infection of Cocidiosis with lesion scoring were made by a veterinarian. Data collected were analysed according to ANOVA. The results indicated no significant differences ($p>0.05$) in ADG and FCR but significant differences ($p<0.05$) in mortality and lesion scoring of broilers under the groups with and without *A. Paniculata* leaf supplement. This result suggests that although there was no difference in ADG and FCR the broiler groups fed with *A. Paniculata* supplement would give a higher benefit for the farmers due to lower mortality rates.

Key words: *Andrographis Paniculata,* broiler performance, Coccidia, Cocidiosis, Productivity

Introduction:

Raising broiler chicken is becoming popular in Thailand especially in Phichit Province. The most well known commercial poultry are broiler. Their population increase fast, due to their short rearing period (only 45 days).

One of the main poultry diseases of economic importance is Cocidiosis which remains one of the most expensive and most common diseases of poultry in Thailand (Kreingsak, 1993). Cocidiosis is caused by a protozoan parasite that lives inside the epithelial cells of the intestines. When it is released into the intestinal lumen it destroys the cell causing hemorrhage. Control is with the use of a cocidiostat in the feed from 4 - 16 weeks of age

for layers and breeders. In most cases, broiler flocks were mixed-infected with 4 or more species of *Eimeria. Eimeria tenella* is the most common and most serious Cocidiosis form in Thailand, followed by *E. necartrix and E. maxima.* When the anticocidial drug susceptibility test was carried out, sulfonamide was most effective as chemotherapy and nicarbazin as preventive medication. However, some isolates of cocidia showed complete or partial resistance to some kinds of drugs.

The farmers in Thailand usually use antibiotics, for example chlortetracycline, to stimulate the growth rate of broiler and to prevent poultry diseases. However, the use of antibiotics can cause problems if there are residues in the chicken meat. At the present, the broiler farmers start looking for medicinal plants from the nature to replace the use of chemical substance.

Andrographis paniculata, sometimes called "India Echinacea", is a shrub found throughout India and other Asian countries. All over Asia (China, India, Java and Thailand) it is a well known medicinal plant used in human medicine. Its active compound is Andrographolide. It is long known in traditional Asian medicine as an immune system booster and it is said to have beneficial effects on various modify functions and ailments ranging from degenerative diseases to common cold. Historically, it has been used by epidemics, including the Indian flu in 1919, during which *A. paniculata* was credited with stopping the spread of the disease.

If *A. paniculata* is effective against Cocidiosis it would be a better way to try to reduce cost in poultry production than use of antibiotics, since it causes no problem of toxic residues in chicken meat, as is the case when chemical substances in form of antibiotic are used. Another reason is the effective use of *A.Paniculata* for long time for human to cure Cocidiosis. This study evaluates the use of *Andrographis paniculata* Wall. ex. Nees. effects in broiler performance.

Objective:

The study was conducted to study on the effect of different levels of *Andrographis paniculata* Wall ex. Nees. leaves powder mixed in the broiler food on Cocidiosis, growth performance, feed efficiency and broiler mortality.

Materials and Methods:

Under a Completely Randomized Design (STEEL and TORRIE, 1960), 105 broilers were randomly divided into 5 groups. All groups were raised in coops on deep litter under Station management for 6 weeks during February – March, 2001. All chicken were fed with a basal diet of formulated feed mix added *A. Paniculata* leaf meal supplement at different levels: 0% (control group without *A. Paniculata*), 0.1%, 0.2%, 0.3% and 0.4% of *A. paniculata*. Average daily weight gain (ADG), feed conversion ratio (FCR) and mortality were measured for each group. Every 2 weeks blood samples were collected and analysed for glucose, albumin and globulin. As the chicken reached three weeks of age coccidia were spread to the bedding. After 1 week the faeces was checked and cocidia found in every group. After 6 weeks the chicks were slaughtered, the intestines collected

and diagnosis for infection of Cocidiosis with lesion scoring were made by a veterinarian. Data was collected for analyzed according to ANOVA.

Results and Discussion:

The result indicated no significant differences ($p>0.05$) in average daily weight gain (table 1) and feed conversion ratio (table 2) but significant difference ($p<0.05$) in mortality rate (table 3) of broiler in Group 1 and group 3, 4,5, and highly significant difference ($p<0.01$) in between group 1 and group 5 whereas there between group 1 and 2 was no significant difference and also not among group 2, 3, 4.

Average daily weight gain ranged from13.69 – 30.60 g/broiler/day in group 1 and from 13.46 – 43.45 in group 2, 11.42 – 44.25 in group 3, 12.32 – 45.52 in group 4 and 12.17 – 48.57 in group 5. Mean feed conversion ratio for 1 kilogram weight gain of broiler ranged from 1.22 – 2.69 in group 1, 1.16 – 2.23 in group 2, 1.21 – 2.17 in group 3, 1.17 – 2.22 in group 4 and from 1.20 – 2.05 in group 5. Broiler mortality rate was 42.85 % in group 1, 33.33 % in group 2, 19.04 in group 3 and 4 and 0 % in group 5, where no dead bird was found. The lesion scoring done by veterinarian (table 4) to evaluate Cocidiosis infestation after slaughter at 6 weeks amounted to 3.33 for group 1 which was the highest score. It was 2.17, 1.67, 1.50 and 1.33 for group 2,3,4 and 5 respectively. The result indicated no significant difference in lesion scoring between Group 1 and 2. Also among group 2, 3, 4 were no significant difference, however between group 1 and group 3, 4, and 5 there was significant difference.

Table 1. Average Daily Weight Gain (ADG) of broiler fed diets with varying levels of *Andrographis paniculata* leaf meal supplement after infection with Cocidiosis.

Broiler Performance	Group	Week						ΣX	$\bar{X}$
		1	2	3	4	5	6		
ADG (g/broiler)	1	13.69	19.83	26.59	28.01	30.60	25.22	143.94	23.99
	2	13.46	17.61	23.33	35.24	43.45	33.81	166.90	27.81
	3	11.42	17.46	23.37	44.25	38.80	39.76	175.06	29.17
	4	12.32	19.32	27.70	30.91	45.52	36.58	172.35	28.72
	5	12.17	18.05	29.60	31.51	41.83	48.57	181.73	30.28
	CV (%)	11.15	31.49	23.51	30.66	35.01	25.75		

Table2. Feed Conversion Ratio (FCR) of broiler fed diets with varying levels of *Andrographis paniculata* leaf meal supplement after infection with Cocidiosis

Broiler Performance	Group	Week						ΣX	$\bar{X}$
		1	2	3	4	5	6		
FCR (kg feed/kg BW)	1	1.22	1.44	1.51	1.75	2.44	2.69	11.05	1.84
	2	1.16	1.43	1.48	1.65	1.99	2.23	9.94	1.65
	3	1.21	1.42	1.48	1.62	2.05	2.17	9.95	1.65
	4	1.17	1.30	1.39	1.63	1.80	2.22	9.51	1.58
	5	1.20	1.41	1.42	1.59	1.76	2.05	9.43	1.57
	CV (%)	13.76	12.16	17.44	11.72	20.61	10.17		

Table 3. The mortality rates of broiler fed diets with varying levels of *Andrographis paniculata* leaf meal supplement after infection with Cocidiosis

Group	Rations of A.Paniculata (%)	Mean of mortality rate
1	0	42.85^{a}
2	0.1	33.33^{ab}
3	0.2	19.04^{bc}
4	0.3	19.04^{bc}
5	0.4	0^{c}

LSD (0.05) 23.24
CV (%) 55.92
* The same letter is indicates no significant difference between means of each group
The difference letter is indicates significant between means of each group at P = 0.05 level

Table 4. The lesion scoring measured in the intestine of broiler fed diets with varying levels of *Andrographis paniculata* leaf meal supplement after infection with Cocidiosis

Group	Rations of A.Paniculata (%)	Mean of lesion scoring in intestine of broiler
1	0	3.33^{a}
2	0.1	2.17^{ab}
3	0.2	1.67^{b}
4	0.3	1.50^{b}
5	0.4	1.33^{b}
LSD (0.05)		1.22
CV (%)		33.91

* The same letter indicates no significant difference between means of each group
Different letters indicate significant differences between means of each group at P = 0.05 level
* Diagnosis of Cocidiosis by lesion scoring ranging from 0 – 4 (Johnson and Reid, 1970):

0	:	found no lesions
1	:	found little of lesions
2	:	found medium of lesions
3	:	found much stronger of lesions
4	:	found strongest of lesions

Conclusions:

1. No significant differences in performance of broiler under the two rearing systems in terms of growth and feed efficiency but in mortality and lesion scoring there was significant difference after the infection of Cocidiosis.
2. The proper ration of *A. Paniculata* in the broiler feed is according to this study 0.4 %. The result indicated that at this level there was lower mortality rate and less symptoms of Cocidiosis in the intestine as compared with the other groups. .
3. The broiler groups fed feed with *A. Paniculata* supplement gives a higher economic return than the broiler group fed feed without *A. Paniculata* supplement because of lower mortality rates. A. Paniculata can reduce the very serious wastage from Cocidiosis if it is added as supplement to broiler feed. If promoted to smallholder farmers it will improve the productivity.

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