Effect of Various Levels of Commercial Herbitol on the Feed Efficiency and Blood Composition of Broiler

Author's Details:

(1) Shahid Iqbal -Department of Poultry Sindh Agriculture University Tando jam, **(2) Imdad Leghari** -Department of Poultry Sindh Agriculture University Tando jam, **(3)Abdullah Sethar D.V.M., M. Sc (Honors)** from Pakistan and Ph.D from England, UK. Deputy Project Director,Sindh Agricultural Growth Project (Livestock Component) World Bank Assisted, Government of Sindh, Hyderabad-Sindh**, (4)Azizullah Memon**, Assistant Professor ,SAU-Tando jam **(5).M.Ali Bhatti,** Assistant Professor IBA-Sulkkur

Abstract: *The experiment was conducted during 2015 to evaluate the effect of commercial Herbitol at various concentrations on feed efficiency and blood composition of broiler. A total of 200 Hubbard day old chicks were purchased from local market and brought to Poultry Experimental Station, Department of Poultry Husbandry, Faculty of Animal Husbandry & Veterinary Sciences, Sindh Agriculture University Tandojam.* ***The birds were reared for a period of 06 weeks (42 days). Treatments include*** *group A = control, group B = 2 ml / liter of Herbitol, group C = 4 ml / liter of Herbitol and group D = 6 ml / liter of Herbitol* ***Key Words****: Effect, Commercial, Herbitol, Efficiency.*

Introduction:

Possess qualities of growth improvement of poultry birds due to the presence of pharmacologically active substances. They increase the feed intake, activate the digestive system, enzymes and enhance the immunity of birds (Anonymous, 2015). Antibiotics and growth promotors are being largely use to get ideal weight and profit in the products of poultry like eggs and meat (NOAH, 2001). Antibiotic usage provides good profitable market but there is criticism over the usage of antibiotics because of its residual effect in poultry products (Donoghue, 2003). Among preventive antibiotics, herbs have been used for natural therapy as pharmaceuticals; however, recently aromatic plants and their extracts are introduced into the animal feeding. Some herbs and herbal extracts beneficially improve the feed intake and secretion of digestive juices (Faleiro *et al*., 2003). Since ancient time there is large usage of plant sources to treat ill animals and birds (Ganesan and Bhatt, 2008). Herbal plants have no harmful effect on hematological and serum biochemical parameters of the birds (Oduola *et al*., 2007).

History of herbs is as long as the human story, since the earliest times, people uses these plants. War has been fighting to conquer the land because of the plant, even if today we continue to rely on many of our new alien species pharmaceuticals and chemicals (Richmond and Mackley, 2000). Now a days many countries tended to minimize or ban the chemical components for their harmful side effects on both animals and human. So, it is essential to use natural herbs. In China medicinal herbs have been used for growth of broilers (Sajid *et al.,* 2015). In addition, many plants have natural properties, e.g., tonics, antiparasitic, anti-fungial, stimulant, carminative antiseptic, anti-bacterial and anti-microbial (Soliman *et al*., 1995). Edible plants, herbs, and Vegetable spices are suggested as non-traditional growth promoters or feed additive in diets to increase the growth of broiler, feed conversion efficiency (FCR) and decrease the feed cost (Hassan *et al*., 2004). In broiler diets useful herbal plants supplemented as growth promoters and detected a noticeable development in their body weight, feed conversion and mortality percentage (Sabra and Mehta, 1990). Herbs and herbal products positively influence the growth performance (Guo *et al*., 2000). Mottaghitalab (2000) reported that garlic may be used as a natural herbal growth promoter for broilers, without any side effect, neither for chicken performance nor for consumers. Wezyk *et al*. (2000) reported that replacing antibiotic growth promoters with herbs resultantly decrease the body weight, increased feed conversion ratio. The results of some experiments with broiler chickens indicate that herb supplements have a positive effect on the growth performance and the colour of skin (Zglobica *et al*. 1994). Feeding dietary garlic powder for 21 days significantly reduce plasma cholesterol level of broiler chicken, without altering the growth performance of the broiler chickens or the feed efficiency (Konjufca *et al*. 1997).

Data Collection Methodology

The experiment was conducted to evaluate the effect of commercial Herbitol at various concentrations on feed efficiency and blood composition of broiler. A total of 200 Hubbard day old chicks were purchased from local market.The birds were reared for a period of 06 weeks (42 days). The chicks were initially weighed and randomly divided into four groups A, B, C and D with equal number of chicks .Group A was kept as control, whereas group B, C and D was supplemented Herbitol @ 2ml/L,4ml/L,and 6ml/L respectively.

Management

Housing

The floor space was provided ½ sq. ft. per broiler during brooding period and 1 sq. ft. during lateral stage of rearing. The shed was initially washed with water and later on washed with phenyl disinfectant. The shed was left to dry for 24 hours.

Litter

The wooden dust was dried in sun light and used as a litter material. The lime stone was mixed at the rate 2 percent as disinfectant. The litter was used as a two inch thick layer for comfort to chicken.

Brooding

During brooding period (1-3weeks), proper temperature was maintained i.e. 90-95^{o}F during first week by using electric brooder fitted with 40/60 watt electric bulb. At first day sugar was offered to chicks for flushing.

Feeding

The feed and water were offered *ad libitum*. Two drinkers and two feeders were provided to each group. The feed and water refusal from each group was weighed and measured daily in the morning.

Lighting

The 24 hours lighting was provided throughout experimental period and bulbs were hanged at the height of eight feet in the shed.

Vaccination

The following vaccination program was followed:

Days	Vaccines	Route
1st -3rd	N.D+I.B	E D
10th -12th	I.B.D	E D/ D W
16th -27th	H.P.S	Sub cut.1/2 cc
22st	I.B.D	D/W
28th	N.D	D/W

Note: N.D=Newcastle disease. **I.B=**Infectious bronchitis. **I.B.D=**Infectious bursal disease. **H.P.S**=Hydro pericardium syndrome. **E/D=**Eye drop**. D/W=**Drinking water

Parameters

The following parameters were recorded

Live body weight: After arrival of day old broiler at Poultry Experimental Station, individual chicks were weighed by using electric weighing scale and later broilers were weighed at the completion of each week.

Feed intake: Feed was provided *ad libitum* to the broiler twice a day and refusal of feed was collected from feeders of each group and weighed and finally consumed feed was calculated daily. For this practice, the following formula was used:

Feed intake (g/b/d) = Total feed offered – Total feed refused

Water intake (ml)

Fresh water was provided to the broiler twice a day. Refusal of water was collected, measured and subtracted from the water offered and finally consumed water was recorded by using the following formula:

Water intake (ml/b/d) = Total water offered (ml) – Total water refused (ml/group/d)

Feed conversion ratio (FCR)

Feed conversion ratio was calculated on the basis of total feed consumed by a broiler bird for gaining one kg weight. Thus, the feed conversion ratio is actually the feed consumed by the average broiler for achieving one kg live body weight.

$$FCR = \frac{\text{Total feed intake}}{\text{Total live body weight}}$$

Following parameters was performed in the Department of Veterinary Physiology and Biochemistry, Faculty of Animal Husbandry and Veterinary Sciences, Sindh agriculture university Tandojam.

Parameter	Method/Kits
Haemoglobin	Sahli Method
Erythrocyte Sedimentation Rate	Westergren Method
Differential leukocyte count	Haemocytometer method
Glucose	Trinder"s Method
Total Protein	Human Kit
Cholesterol	Revised Method.
Serum Glutamic Pyruvic transaminase	Reitman Frankel method

Economics: The economics was calculated from the following formula

Net Returns = income – expenditure

Blood profile (hemoglobin, packed cell volume, red blood cells, white blood cells, glucose, total protein, cholesterol and serum glutamic pyruvic transaminase)

Parameter	Method/Kits
Haemoglobin	Sahli Method
Erythrocyte Sedimentation Rate	Westergren Method
Differential leukocyte count	Haemocytometer method
Glucose	Trinder"s Method
Total Protien	Human Kit
Cholesterol	Revised Method.
Serum Glutamic Pyruvic transaminase	Reitman Frankel method

Data Analysis: The collected data was analyzed statistically by using method described by Gomez and Gomez (2000).

Results
Feed intake

Analysis of variance (ANOVA) reported non-significant (P>0.05) difference in feed intake of broilers among the groups. All-pair-wise (LSD) test indicated that there was non-significant variation in feed intake between groups A, B, C and D, respectively.

The outcomes (Figure-1) shows that average feed intake in groups A, B, C and D was 4050, 4044, 4077 and 4130 g/bird, respectively. Maximum feed intake of 4130 g/bird were noted in group D where the bird fed on Herbitol level of 6 ml / liter of water as compared to group C (4077 g/bird) where the birds fed on Herbitol level of 4 ml / liter of water. The average feed intake further decreased to 4050 g/bird in group A (control) where the bird did not fed on Herbitol compound. Minimum feed intake of 4044 g/bird was noted in group B where the birds fed on Herbitol level of 2 ml / liter of water.

The results reveal that broilers in group D consumed more feed intake as compared to broiler in group C, A and B, respectively.

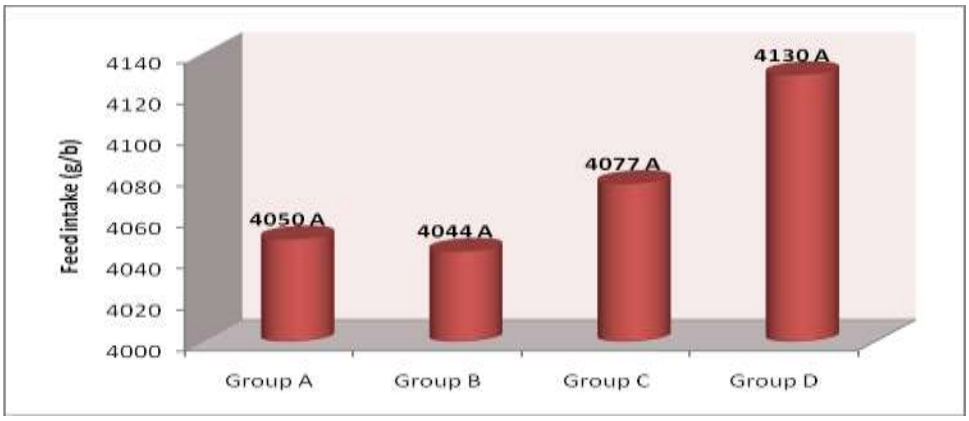

Figure 1: Feed intake (g/bird) of broiler fed on various level of commercial Herbitol compound.

S.E.±	33.731
LSD 0.05	47.703
P-value	0.3246NS

The values in column matching with similar alphabets did not differ significantly at probability level of 0.05**.**

Water intake

Analysis of variance (ANOVA) reported significant (P<0.05) difference in water intake of broilers among the groups. All-pair-wise (LSD) test indicated that there was non-significant variation in water intake between treatment groups B, C and D, but significant difference in water intake for treatment group with control group, respectively.

The result (Figure-2) indicated that average water intake in groups A, B, C and D was 7936.5, 8189.8, 8196.7 and 8264.9 ml/bird, respectively. Maximum water intake of 8264.9 ml/bird were noted in group D where the bird fed on Herbitol level of 6 ml / liter of water as compared to group C (8196.7 ml/bird) where the birds fed on Herbitol level of 4 ml / liter of water. The average water intake further decreased to 8189.8 ml/bird in group B where the bird fed on Herbitol level of 2 ml / liter of water. Minimum water intake of 7936.5 ml/bird was noted in group A where the birds do not fed on Herbitol compound.

The results reveal that broilers in group D consumed more water intake as compared to broiler in group C, B and A, respectively.

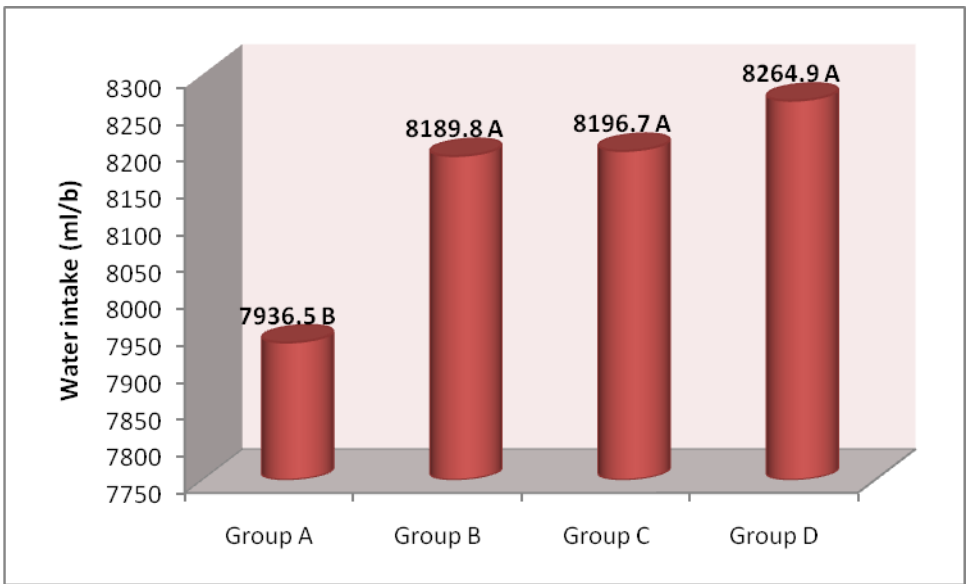

Figure 2: Water intake (ml/bird) of broiler fed on various level of commercial Herbitol compound.

S.E.±	47.774
LSD 0.05	67.562
P-value	0.0058**

The values in column matching with similar alphabets did not differ significantly at probability level of 0.05**.**

Conclusions

The experiment was conducted for a period of six weeks during 2015 at the Poultry Experiment Station, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University Tandojam to evaluate the effect of commercial Herbitol on feed intake and blood composition in broiler. The broilers were allocated different groups and given Herbitol through water at various concentrations. The treatments groups were comprised of A (Control), B (Herbitol @2ml/litre water), C (Herbitol @4ml/litre water) and D (Herbitol @6ml/litre water). The findings of the experiment are summarized in this chapter. The results indicated that feed intake was considerably higher in broiler of group D as compared to broiler in group C, A and B, respectively. There was no significant difference in feed intake among the treatment and control group. Water intake was remarkably higher in broiler of group D as compared to broiler in group C, B and A, respectively. There was significant difference in water intake among the treatment and control group. Live body weight was extremely higher in broiler of group D as compared to broiler in group C, B and A, respectively.

References

Ademola, S.G., G.O. Farinu and G.M. Babatunde 2009. Serum Lipid, Growth and Haematological Parameters of Broilers Fed Garlic, Ginger and Their Mixtures. World Journal of Agricultural Sciences 5 (1) : 99-104.

Agbede, J.O. and V.A. Aletor. 2003. Evaluation of fish meal replaced with leaf protein concentrate from Glyricidia in diets for broiler chicks: Effect on performance, muscle growth, haematology and serum metabolites. International Journal of Poultry Science 2 (4): 242-250.

Alkhalf, A., M. Alhaj And Homidan. 2010. Influence of probiotic supplementation on blood parameters and growth performance in broiler chickens. Saudi Journal of Biological Sciences. 17 (3) : 219-225.

Amaechi and E. Iheanetu. 2009. Evaluation of dietary supplementation of broiler chicks with different levels of aloe vera as a replacement for antibiotic growth promoter on broiler production in the humid tropics. International Journal of Veterinary Science. 27 (1) : 178-182.

Anvar, A., B. Dastar and F. Forghani. 2010. Effect of Herbitol Extracts on Growth Performance and Carcass Characteristics of Broiler Chicks. 4 (2): 35-38.

Deen, H.J. 2007. Some haematological and biochemical effects of herbitol on broiler chicken. Bas. J. Vet. Res. 6 (2): 56-63.

Donoghue, D.G. 2003.Antibiotic residues in poultry tissues and eggs. Human health concerns. Poultry Science, 82(4): 618 – 621

Durrani, F.R., Abidullah, N. Chand, Z. Durrani and S. Akhtar. 2008. Hematological, biochemical, immunomodulatory and growth promoting effect of feed added wild mint (mentha longifolia) in broiler chicks. Sarhad J. Agric. 24 (4) : 209-214.

Elagib, H. A. A., El-Amin W. I. A., 2Elamin K. M. and E. Malik. 2011. Effect of Dietary Garlic (Allium sativum) Supplementation as Feed Additive on Broiler Performance and Blood Profile. Journal of Poultry Science. 39 (1) : 213-218.

Elagib, H.A.A., E.M. Nabiela, S.A. Abbass and T.A. Ginawi. 2012. Effect of Natural Spices on Plasma Proteins in Broiler Chicks. journal of Poultry Sciences. 39 (1) : 212-220.

Ewuola, E.O. and G.N. Egbunike. 2008. Haematological and serum biochemical growing rabbit bucks fed dietary fumonisin. African Journal of Biotechnology. 7 (23): 4304-4309.

Faleiro, M. L., M.G. Miguel, F. Ladeiro, F. Venanclo, R. Taveres, J.C. Brito, A.C. Figueiredo, J.G. Barrosoand L.G. Pedro. 2003. Antimicrobial activity of essential oils isolated from Portuguese endemic species of Thymus. Lett.Appl. Microbial. 36:35-40.

Fayed, R., A.H.A. Razek and M. Ouf. 2013. Effect of dietary garlic supplementation on performance, carcass traits, and meat quality in broiler chickens. Journal of Animal Nutrition. 52 (4) : 154-160.

Ganesan, S. and R.Y. Bhatt. 2008. Qualitative Nature of Some Traditional Crude Drugs Available in Commercial Markets of Mumbai, Maharashtra. India Ethnobotanical Leaflets 12: 348-360.

Gomez, K. and K. Gomez. 2000. Statistical analysis methods (6th edition).

Guo, F., R.P. Kwakkel and M.W.A. Verstegen. 2000. The use of chinese herbs as alternative for growth promoters in broiler diets. Proc. of XII World's Poult. Cong., 20-24 Aug., 2000, Montreal, Canada.

Guray, E., N. Ocak, A. Altop, S. Cankaya, H. M. Aksoy and E. Ozturk. 2011. Growth Performance, Meat Quality and Caecal Coliform Bacteria Count of Broiler Chicks Fed Diet with Green Tea Extract. Asian-Aust. J. Anim. Sci. 24, (4) : 1128 - 1135