

AVAILABILITY OF NUTRIENTS TO SCAVENGING CHICKEN AND DUCKS IN BANGLADESH

M. A. Ukil¹, M. A. R. Howlider² and Q. M. E. Huque³

ABSTRACT

Free range reared 120 indigenous laying hens and 120 indigenous laying ducks were killed in different seasons and crop and gizzard contents were collected to determine the composition of scavenging feed. The collected feed contents was preserved and analyzed for the proximate components and mineral contents. The chicken's feed contained 8.18% CP, 9.44% CF, 1.61% EE, 9.78% Ash, 57.9% NFE, 3.38% Ca and 0.57% P. While CP, CF, EE, Ash, NFE, Ca and P contents of duck feed were 9.40%, 9.76%, 1.53%, 12.63%, 53.11%, 3.76% and 0.43% respectively. The estimated TME contents of chickens and duck feed were 2776.66 and 2670.43 K cal Kg⁻¹ respectively.

Key words : Availability of nutrients, Scavenging, Chicken, Ducks, Bangladesh

INTRODUCTION

About 98% of the poultry meat and eggs in Bangladesh are produced by the indigenous chicken and ducks (FAO, 1989). Though poor producer (Bulbul, 1983; Ahmed and Islam, 1985; Sazzad, 1986; Salam and Bulbul, 1983), the indigenous chicken and ducks are thus of great importance to the national economy. Most of the efforts of poultry development activity in Bangladesh have been taken to improve the native stock is the cross breeding / upgrading native stock using exotic cockerels through cockerel exchange program. Little attention has given to the nutritional status of scavenging poultry birds. Non genetic factor, like poorer nutrition has a marked influence on production under scavenging system (Mukherjee, 1987 and Sazzad *et al.* 1988). Huque and Hussain, (1991) suggested improved nutrition to optimize production in scavenging ducks. Huque *et al.*, (1991) noted increased egg production in scavenging indigenous chicken on supplemental feeding. The nutritional status of scavenging chicken and ducks is not known. Any adaptation and improvement program with exotic improved birds required

higher nutrients than for the indigenous stock (Sazzad, 1986). The present study was designed to determine the availability of nutrients to indigenous scavenging chicken and ducks in Bangladesh.

MATERIALS AND METHODS

Sample collection

Scavenging egg laying chicken and ducks were collected from the farmers in different seasons, after a few hours of scavenging, usually 11 am to 1 p.m. They were killed by making incision on the throat with a sharp knife and then taken to the laboratory. The carcass was opened from vent to wing through abdomen and wing was removed using a bone cutter. The breast bone was removed by hand pressure to separate gastro-intestinal tract and opened longitudinally with a knife and all food particles in gizzard an crop of the individual birds were collected separately.

Preparation of the sample

¹ Dept. Animal Science, Universiti Putra, Malaysia 43400 UPM, Serdang, Selangor Malaysia

² Dept. Poultry Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh

³ Director General, Bangladesh Livestock Research Institute Savar, Dhaka, Bangladesh

Previously weighed samples were dried in the oven at 65 °C until the weight is constant. The dried samples were placed on the paper and grits were separated. The samples were then grounded using 0.40 mm mesh screen and preserved in airtight glass jar for chemical analysis.

Chemical Analysis

Dry matter was determined by drying the samples within an oven up to a constant weight at 105 °C. Crude protein, Crude fiber, Ether extract, Ash and Nitrogen free extract were determined by the methods of A.O.A.C. (1984).

The Calcium and the Phosphorus contents of grounded samples were determined by the methods of Chapman and Pratt, (1961). The samples weighed (1g) and digested with di-acid mixture ($H_2SO_4 : HClO_4 = 2 : 1$) for total contents of Ca and P. After digestion, digester was transferred to a 50 ml volumetric flask and filled in up to the mark using deionated water. Total Ca content in the digest was determined directly by using the Atomic Absorption flame photometer. The P in the digest was determined by developing yellow colour with addition of Ammonium molybdate, Ammonium vanadate (Burton's solution) and measuring the colour with the help of a spectrophotometer at 440 nm.

The Metabolisable Energy (ME) of the samples was estimated using the formula of Wiseman, (1987). The ME was estimated on TME basis assuming that TME is 6% higher than ME (Wiseman, 1987).

All data were analyzed for a 2 (species) × 3 (season) factorial experiment in completely randomized design. An analysis of variance was performed to compare the treatment means.

RESULTS AND DISCUSSION

The Nitrogen free extract (NFE) was higher ($P < 0.01$), but Crude protein (CP) and ash content was lower ($P < 0.01$) in chicken feed than those in ducks (Table 1). The chicken feed had slightly higher ($P > 0.05$) Ether extract (EE) and lower crude fiber (CF) than that for ducks. The CP content in feed was highest in

summer, intermediate in dry season and lowest in winter ($P < 0.05$). Difference in feed CP content between chicken and ducks were wider in dry and wet season than that in summer. The CF, EE and Ash contents were slightly higher in summer than those in dry and wet seasons. The CP contents in ducks feed were relatively higher ($P < 0.01$) in dry and wet seasons.

It is generally thought that scavenged chicken feeds are different because of the differences in scavenging venue, ingredient availability, choice, feeding habit and nutritional requirements existed between two species. This idea was partially reflected in the results of the present study. The chicken feed practically had a lower CP content than that for ducks.

This difference might have been arisen by the fact that chicken had a greater access to energy rich lower CP scattered grains on the other hand, while ducks had a access to CP rich lower energy feed ingredients like snails, Oystershells and other aquatic animals and weeds. A higher CP in chicken feed in summer may be explained by the higher availability of insects and earthworm to them on scavenging in that season. The CF contents in scavenged noted that in this study were much higher than those recommended by various standard; ARC, 1985 and NRC, 1984. The poorer genetic make up is often blamed (Bulbul, 1983; Sazzad, 1986; Barua and Howlader, 1990) for poorer performance of indigenous scavenging chicken and ducks. This finding signify that dietary CP contents in scavenged feed may be a major problem limiting growth and egg production in indigenous chicken and ducks.

The Ash, Ca and P contents scavenged feed for chicken and ducks in different seasons indicate that mineral deficiency can not blamed for the reduced performance of the scavenging birds. A higher estimated TME in chicken feed than in ducks may mainly due to difference in scavenging venue of the two species.

An improvement in growth in chicken on supplemental feed under scavenging condition by Sazzad, (1986) support the result of the present study that rather than poorer genetic make up;

nutritional deficiency is a major reason for reduced performance under scavenging condition. This study further implies that any supplement to improve performance of scavenging chicken and ducks should include CP rich ingredients.

REFERENCES

- Ahmed, S. and Islam, M. N. 1985. Backyard Poultry Development project in 100 villages sponsored by Bangladesh Agricultural University and Assisted by UNICEF, Bangladesh. *Proceedings of the 1st conference of Bangladesh Animal Husbandry Association*, February 23-24, Bangladesh Agricultural Research Council, Dhaka.
- AOAC, 1984. *Official Methods of Analysis*. 14th edition. Association of Official Agricultural Chemists, Washington DC.
- ARC, 1985. *Agricultural Research Council of United Kingdom*. Cited by Bolton and Blair in Poultry Nutrition, 4th imp 1986. Pp.:92-100.
- Barua, A. and M. A. R. Howlider, 1990. Prospect of native chicken in Bangladesh. *Poultry Adviser*, 23(5):57-61.
- Bulbul, S. M. 1983. More protein for the under nourished through village poultry project. Maximum livestock production from minimum land. by C. H. Davis, T. H. Preston, M. Haque and M. Saadullah (1983). *Proceedings of 4th seminar*. Held in Bangladesh Agricultural University, Mymensingh. Bangladesh.
- Chapman, H. D. and Pratt, P. F. 1961. *Methods of Analysis for Soil, Plants and Waters*. University of California, Division of Agricultural, Sciences.
- FAO, 1989. FAO statistics on Livestock population, *Asian Livestock*, 16(2):18-23.
- Huque, Q. M. E. and Hossain, M. J. 1991. Production potentials of ducks of three genotypes under scavenging system of management. *Bangladesh Journal of Livestock Research*, BLRI 1(1)
- Mukherjee, T. K. (1987). *Problems and prospects of genetic improvement of poultry for rural areas in Asia*, at Dhaka, Bangladesh.
- NRC, (1977). *National Research Council, Nutrients Requirements of Poultry*. National Academy of Animal Sciences, 60 (7):866-868.
- Salam, M. A. and Bulbul, S. M. 1983. A comparative study of performance of Khaki Campbell and Indian Runner Ducks under BAU farm. *Bangladesh J. Anim. Sci.*, 12 (1a2):40.
- Sazzad, 1986. Reproductive performance of Desi hens under scavenging and intensive systems of rearing. *Proceedings of 1st Annual Livestock Research Workshop*. Bangladesh Livestock Research Institute, Savar, Dhaka.
- Sazzad, M. H., Mamatazul, S. M. H. and Asaduzzaman, M. U. 1988. Growth pattern of Desi and Khaki Campbell ducks under rural condition. *Indian J. Poult. Sci.*, 23(2):165-166.
- Wiseman, J. 1987. *Feeding of Non Ruminant Livestock*.