



Research Article

PLASMA BIOCHEMICAL PROFILE OF ADULT MALE TURKEY DOMESTICATED IN MIZORAM, INDIA

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Abstract: Turkey (*Meleagris gallopavo*) plays a significant role in augmenting the economic and nutritional status of varied population across the globe. The turkey farming and its production is gaining momentum as a new agricultural avenue for the commercial production of meat in India. The present study reports the normal physiological values of haematological indices and biochemical profile of the adult female turkey under Agro-climatic conditions of Mizoram. The observed biochemical parameters were Glucose-355.50±43.38 mg/dl, Total cholesterol-130.75±22.02 mg/dl, Triglyceride-62.50±32.22 mg/dl, HDL-cholesterol-87.50±9.88 mg/dl, Total protein-5.25±0.79 gm/dl, Albumin-1.88±0.29 gm/dl, Globulin-3.38±0.51 gm/dl, A:G-0.56±0.02 gm/dl, Uric acid-7.73±2.93 mg/dl, BUN-3.40±0.49 mg/dl, Creatinine-0.40±0.08 mg/dl, Direct bilirubin-0.10±0.00 mg/dl and Total bilirubin-0.20±0.00 mg/dl.

Keywords: Turkey, glucose, HDL cholesterol, uric acid, creatinine

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Introduction

Turkey (*Meleagris gallopavo*) represents almost 2% of the total poultry population [1] and occupies an important position next to chicken, duck, guinea fowl and quail. The species is playing a significant role in augmenting the economic and nutritional status of varied population across the globe. It is a prized avian species reared all over the world for their tasty and high-quality meat, besides its link with celebrations of "Christmas" and "Thanksgiving celebrations" in the western world [2]. In recent years, the production of turkey is gaining momentum as a new agricultural activity for the commercial production of meat in India as a source of animal protein due to its high protein percentage and low fat percentage [1, 3, 4, 5]. However, assessment of health of the birds is paramount importance to use them for meat purpose. The determination of the serum biochemical constituents is valuable and informative to gain information regarding their nutrition, sex, age and physiological status [6]. Haemato-biochemical indices are mostly used to determine health condition and level of stress due to various factors [7]. A variety of factors can affect the haematological and biochemical parameters in animals, including the breed, gender, age, reproductive status and seasonal variations [8]. The knowledge of normal values of biochemical constituents of different animals are of academic as well as practical importance for clinical and experimental interpretations. In view of the above, the current study is aimed to establish an appropriate baseline data of this turkey breed under Agro-climatic conditions of Mizoram (India).

Materials and Methods

Clinically healthy adult female turkey (*Meleagris gallopavo*) reared at Poultry Farm, A.H. & Veterinary Department, Government of Mizoram Selesih, Aizawl were selected for the study. Approximately 3 ml of blood samples were collected aseptically from wing vein using pre-sterilized polypropylene disposable syringe and transferred to heparinized non-vacuum tubes. The blood samples were centrifuged at 2,500 rpm for 5 min in a refrigerated centrifuge machine (Hermle-

Z326K) to separate out the plasma for biochemical analysis using a fully automated Dry clinical analyzer (FujiFilm 4000i). The results were then analyzed statistically using suitable statistical method as per Snedecor and Cochran [9].

Results and Discussion

The observed biochemical parameters in the adult male Turkey is given in the Table-1. The plasma glucose concentration observed was 355.50±43.38 mg/dl and the value ranges between 312.00 and 410.00 mg/dl. The observed value is higher than the values reported in literature. Gattani, *et al.*, [10] reported glucose concentration of 251.61±12.19 mg/dl during winter and 220.42±8.90 mg/dl during summer for adult male turkeys reared under arid tropical environment. Isidahomen, *et al.*, [11] reported a value of 189.84±4.80 mg/dl whereas Sonawane, *et al.*, reported a value of 176.57±3.21 mg/dl. The total cholesterol level observed was 130.75±2.02 mg/dl and the value ranges between 108.00 – 160.00 mg/dl. The observed level in the present investigation is somewhat lower than the values reported in literature. Sonawane *et al.* reported a value of 170.15±2.53 mg/dl while Agina, *et al.*, [12] reported a value of 157.83±12.81 mg/dl. The HDL-Cholesterol level observed was 87.50±9.88 mg/dl and the level ranges between 74 and 97 mg/dl. This observed value is higher compared to the value of 33.08±0.37 mg/dl reported by Sonawane, *et al.* The observed triglyceride level was 62.50±32.22 mg/dl and the value ranges between 36.00 and 104.00 mg/dl. This observed value is lower than value reported (79.81±2.01 mg/dl) by Sonawane, *et al.*, for adult turkeys. The observed total protein, albumin and globulin levels were 5.25±0.79 gm/dl, 1.88±0.29 gm/dl and 3.38±0.51 gm/dl respectively and the values ranges between 4.60 and 6.40 g/dl for total protein, 1.70 and 2.30 g/dl for albumin and 2.90 and 4.1 g/dl for globulin. The observed values are more or less comparable with the values reported by other workers. Isidahomen, *et al.*, [11] reported the serum total protein, albumin and globulin levels of 5.66±0.14 g/dl, 1.19±0.05 g/dl and 4.56±0.15 g/dl respectively.

Table-1 Plasma Biochemical Profile of Adult Male Turkey

SN	Parameters	Average	Range
01	Glucose (mg/dl)	355.50±43.38	312.00-410.00
02	Total Cholesterol (mg/dl)	130.75±22.02	108.00-160.00
03	Triglyceride (mg/dl)	62.50±32.22	36.00-104.00
04	HDL-Cholesterol (mg/dl)	87.50±9.88	74.00-97.00
05	Total Protein (gm/dl)	5.25±0.79	4.60-6.40
06	Albumin (gm/dl)	1.88±0.29	1.70-2.30
07	Globulin (gm/dl)	3.38±0.51	2.90-4.10
08	A:G	0.56±0.02	
09	Uric Acid (mg/dl)	7.73±2.93	5.40-11.80
10	BUN (mg/dl)	3.4±0.49	2.70-3.80
11	Creatinine (mg/dl)	0.40±0.08	0.30-0.50
12	Direct Bilirubin (mg/dl)	0.10±0.00	-
13	Total Bilirubin (mg/dl)	0.20±0.00	-

However, Gattani, *et al.*, [10], Sonawane, *et al.*, [1] and Agina, *et al.*, [12] reported values different from the present finding. Gattani, *et al.*, [10] reported a total protein value 4.12±0.15 gm/dl during winter and 3.42±0.09 gm/dl during summer. The albumin level was 1.45±0.03 gm/dl during winter and 1.31±0.04 gm/dl during summer. The globulin level reported was 2.66±0.15 gm/dl in winter and 2.10±0.08 gm/dl in summer season [10]. Sonawane, *et al.*, reported the levels of 4.17±0.58 g/dl for total protein, 4.00±0.14 g/dl for albumin and 0.70±0.08 g/dl for globulin. Agina, *et al.*, [12] reported the levels of 4.64±0.17 g/dl for total protein, 2.54±0.12 g/dl for albumin and 2.11±0.12 g/dl for globulin. The calculated A: G ratio in present investigation was 0.56±0.02. The observed A:G value is also comparable with the values reported in literature. The A:G value of the male turkey reared under arid tropical environment was 0.58±0.03 during winter and 0.64±0.03 during summer [10]. The uric acid level observed was 7.73±2.93 mg/dl and the level ranges between 5.40 and 11.80 mg/dl. This observed value is higher than the value reported (5.62±0.45 mg/dl) for the adult turkeys domesticated in Nsukka, Emuga state, Nigeria ([12]. The BUN observed was 3.40±0.49 mg/dl and the value ranges between 2.70 and 3.80 mg/dl. Observed creatinine level was 0.40±0.08 mg/dl and the level ranges between 0.30 and 0.50 mg/dl and the values estimated is lower than 0.98±0.11 mg/dl reported by Agina, *et al.*, [12] for the turkeys domesticated in Nsukka, Emuga state, Nigeria. The direct and total bilirubin observed was 0.10±0.00 mg/dl and 0.20±0.05 mg/dl, respectively.

Conclusion

The study thus reports the normal values of major biochemical parameters, which will help in realistic evaluation of the nutritional and managemental practices.

Application of Research

Data generated will be of use to monitor the health as well as disease diagnosis of the turkeys.

Research Category: Disease diagnosis of the turkeys

Abbreviations:

rpm : Revolutions per minute
HDL : High Density Lipoprotein
BUN : Blood Urea Nitrogen
A:G : Albumin:Globulin
et al. : *et alii*

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