

EFFECT OF BREED AND SEX ON SERUM BIOCHEMICAL PARAMETERS IN WHITE PEKIN AND INDIGENOUS DUCKS OF TAMIL NADU

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Abstract: The present work was undertaken to evaluate the effect of breed and sex on Serum Biochemical profile in White Pekin and Indigenous ducks of Tamil Nadu at Post Graduate Research Institute in Animal Sciences (PGRIAS), Kattupakkam. A total of eighty number of ducks comprising 20 male and 20 female each in White Pekin and Indigenous ducks of Tamil Nadu were reared under standard managemental conditions. Once in every 4 weeks, blood was collected from these ducks individually from 20th week onwards for the duration of two months. The parameters such as Total Serum Protein, Serum Albumin, Serum Globulin, Serum Calcium, Serum Cholesterol and Serum Triglyceride were estimated. The results revealed that the White Pekin ducks had significantly ($P<0.01$) higher Total Serum Protein, Serum Albumin, Serum Globulin while Serum Triglyceride level was significantly ($P<0.01$) higher in Indigenous ducks of Tamil Nadu. Among sexes, female Indigenous ducks had significantly ($P<0.05$) higher Total Serum Protein, Serum Globulin than male ducks. Serum Cholesterol and Serum calcium was significantly higher in female White Pekin and Indigenous ducks of Tamil Nadu than the male ducks. Hence, it was concluded that breed and sex had significant effect on Serum Biochemical parameters in White Pekin and Indigenous ducks of Tamil Nadu.

Keywords: Duck, Serum Biochemical Profile, Breed, Sex.

INTRODUCTION

Biochemical parameters are important clinical indicators for disease diagnosis (Malkinson *et al.*, 1980), as they are the major components of the internal environment. Very little research work has been done on Serum Biochemical parameters in ducks. To arrive at some baseline values with regards to biochemical parameters, the present work was carried out to evaluate the effect of breed and sex on serum biochemical parameters in White Pekin and Indigenous ducks of Tamil Nadu.

MATERIALS AND METHODS

Treatment group comprising of 20 male and 20 female each in White Pekin and Indigenous ducks of Tamil Nadu were reared at Post Graduate Research Institute in Animal

Sciences (PGRIAS), Kattupakkam under standard managerial conditions. Ducks were provided with *ad-libitum* duck layer mash feed and water. Two ml of blood was collected from these ducks individually from 20th week onwards for the duration of two months and was kept undisturbed for two hours for the separation of serum. Total Serum Protein and Albumin in serum samples based on Direct Biuret method (Gornall *et al.*, 1949) and BCG method (Doumas, 1970), Serum Calcium based on OCPC method (Kessler and Wolfman, 1964), Serum Cholesterol and Triglyceride based on CHOD-PAP methodology and GPO-PAP method were estimated in the A15 Biosystem Auto analyser using commercially available AGAPPE kits at Centralized Clinical Laboratory, Madras Veterinary College, Chennai.

RESULTS AND DISCUSSION

The effect of breed and sex on Serum Biochemical profile was represented in the Table 1 & 2 respectively. Total Serum Protein and Globulin was significantly ($P<0.01$) higher in White Pekin ducks than Indigenous ducks of Tamil Nadu. Similar observation were also made in crossbred (Khaki Campbell x Non-Descript) and Desi ducks (Swati and Sudhamayee, 2005) and Serum albumin in White Pekin ducks was significantly ($P<0.05$) higher which was concurrent with the findings of Uko and Ataja (1996) and Swati and Sudhamayee (2005) in different breeds of Guinea fowl and Ducks respectively. Female Indigenous ducks had significantly ($P<0.05$) higher Total Serum Protein and Serum Globulin than the male ducks which is probably related to increased level of estrogens which induces protein synthesis in liver. Okeudo *et al.* (2003) and Oladele *et al.* (2007) were agreed with this finding in Nigerian and mallard ducks.

Table 1
Mean (\pm SE) Serum Biochemical parameters in White Pekin and Indigenous Ducks of Tamil Nadu (n=40)

Parameters	White Pekin Ducks	Indigenous Ducks	t value
Total Serum Protein (g/dl)	5.15 \pm 0.13	4.38 \pm 0.17	3.58**
Serum Albumin (g/dl)	1.85 \pm 0.05	1.70 \pm 0.05	2.19*
Serum Globulin (g/dl)	3.31 \pm 0.12	2.70 \pm 0.13	3.31**
Serum Cholesterol (mg/d)	147.79 \pm 1.89	143.68 \pm 1.54	1.68 ^{NS}
Serum Triglyceride (mg/dl)	107.39 \pm 3.47	133.65 \pm 3.52	5.30**
Serum Calcium (mg/dl)	12.24 \pm 0.38	12.52 \pm 0.47	0.47 ^{NS}

** - Highly Significant ($P<0.01$), * - Significant ($P<0.05$) and NS - Not Significant.

Table 2
Mean (\pm SE) Effect of Sex on Serum Biochemical parameters in White Pekin and Indigenous Ducks of Tamil Nadu (n=20)

Parameters	White Pekin Ducks			Indigenous Ducks		
	Male	Female	t value	Male	Female	t value
Total Serum Protein (g/dl)	4.54 \pm 0.19	4.99 \pm 0.73	1.81 ^{NS}	4.20 \pm 0.19	4.89 \pm 0.23	2.36*
Serum Albumin (g/dl)	1.72 \pm 0.04	1.79 \pm 0.06	0.89 ^{NS}	1.83 \pm 0.08	1.94 \pm 0.07	1.01 ^{NS}
Serum Globulin (g/dl)	2.81 \pm 0.18	3.21 \pm 0.15	1.69 ^{NS}	2.37 \pm 0.14	2.96 \pm 0.25	2.04*
Serum Cholesterol (mg/dl)	141.63 \pm 2.95	153.65 \pm 1.56	3.66**	140.32 \pm 1.71	147.05 \pm 2.35	2.32*
Serum Triglyceride (mg/dl)	107.00 \pm 3.68	107.76 \pm 5.90	0.11 ^{NS}	130.59 \pm 5.23	137.36 \pm 4.51	0.97 ^{NS}
Serum Calcium (mg/dl)	11.30 \pm 0.59	13.22 \pm 0.35	2.73**	11.18 \pm 0.51	13.93 \pm 0.66	3.30**

** - Highly Significant (P<0.01), * - Significant (P<0.05) and NS-Not Significant.

Breed had no significant influence in Serum Cholesterol between White Pekin and Indigenous ducks of Tamil Nadu. Female White Pekin and Indigenous ducks had significantly higher Serum Cholesterol level than the male ducks. This was agreed with the findings of Darshan *et al.* (1987) and Pampori and Iqbal (2007) in chicken. Serum Triglyceride was significantly (P< 0.01) higher in Indigenous ducks. Female White Pekin and Indigenous ducks of Tamil Nadu had significantly (P<0.01) higher Serum Calcium than the male ducks which is related to physiological processes needed for the reproductive functions during laying.

CONCLUSION

The present work concluded that White Pekin ducks had significantly higher Serum Protein, Albumin and Globulin while Indigenous ducks of Tamil Nadu had higher Serum Triglyceride. Serum cholesterol and Calcium level were higher in females of White Pekin and Indigenous ducks of Tamil Nadu. Hence, it was concluded both breed and sex had significant effect on Serum biochemical properties.

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