



Impact of Growth and Reproduction of Domestic Fowl (*Gallus gallus domesticus*) on Corpuscular Haematology.

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ABSTRACT

Haematological study was conducted on forty domestic fowl. (*Gallus gallus domesticus*) of either sex (10 male and 10 female) at age of two month and (10 male & 10 female) at age of six month during the period of January to December 2015. The Haematological values of Hb, TEC, TLC, PCV, MCV, MCH, MCHC, Heterophil, Eosinophil, Basophil, Lymphocyte and Monocyte of domestic fowl male at two month were 7.343 ± 0.080 g/100ml, 0.8833 ± 0.044 million/mm³, 7550 ± 534.6 mm³, $23.37 \pm 0.674\%$, $260.0 \pm 5.292 \mu^3$, $83.130 \pm 2.517 \mu\mu\text{gm}$, $32.20 \pm 3.408\%$, $61.47 \pm 0.779\%$, $1.033 \pm 0.066\%$, $7.357 \pm 0.155\%$, $26.33 \pm 0.633\%$, $2.077 \pm 0.0959\%$ respectively female at two month values were 6.201 ± 0.021 g/100ml, 0.6721 ± 0.054 10⁶/mm³, 6425 ± 435.1 mm³, $21.45 \pm 0.0241\%$, $319.19 \pm 2.134 \mu^3$, $90.26 \pm 2.10 \mu\mu\text{g}$, $28.90 \pm 2.565\%$, $56.02 \pm 0.243\%$, $1.80 \pm 0.012\%$, $5.052 \pm 0.107\%$, $18.51 \pm 0.124\%$, $1.086 \pm 0.045\%$ respectively, male at six month values were 11.18 ± 0.261 g/100ml, 3.117 ± 0.072 million/mm³, 9820 ± 277.4 mm³, $54.50 \pm 0.624\%$, $182.7 \pm 5.398 \mu^3$, $38.33 \pm 3.756 \mu\mu\text{g}$, $22.40 \pm 1.097\%$, $28.43 \pm 0.552\%$, $2.583 \pm 0.072\%$, $0.4233 \pm 0.05\%$, $65.40 \pm 0.664\%$, $3.417 \pm 0.231\%$ respectively. Female at six month value were 10.72 ± 0.245 g/100ml, 2.833 ± 0.060 million/mm³, 8780 ± 72.11 mm³, $45.52 \pm 0.696\%$, $154.6 \pm 7.087 \mu^3$, $30.62 \pm 1.704 \mu\mu\text{g}$, $18.51 \pm 1.034\%$, $38.42 \pm 1.034\%$, $3.46 \pm 0.116\%$, $2.10 \pm 0.086\%$, $51.60 \pm 0.568\%$, $3.950 \pm 0.0763\%$ respectively. The present study indicates that growth affects the haematological parameter. TEC, TLC, Hb increases with age. Heterophils decrease with growth. Sexual maturity affects either positively or negatively on haematological value.

Keyword : Haematology, Domestic fowl, growth, Heterophils.

INTRODUCTION

The chicken (*Gallus gallus domesticus*) is a domesticated fowl a subspecies of the red jungle fowl. The exact time and place of domestication are unclear and this may have occurred more than once during human history. It is believed the modern chicken derives from birds kept by the people of the Harappan culture (2500-2100BC) primarily for fighting purpose.

The haematological values can be used to evaluate the state of health of either of a single bird or an entire population. Many factors can influence the level of particular blood constituent. Haematological

values of chicken are influenced by age, sex, breed, climates, geographical location, season, nutritional states, life habit of species and such other physiological factors (Dukes, 1955) so the physiological values of chicken may likely be different.

In General, documents about normal blood profile at different age of chicken is limited. Therefore, the objective of this study was to contribute current knowledge of domestic fowl, at different age at natural condition, essential for interpretation of haematological tests (Mushi *et al.*, 1999, Seiser *et al.*, 2000).

MATERIAL AND METHOD

Haematological studies were performed as per method described by Campbell (1988). Blood was collected from wing vein and punctured heart in EDTA anti-coagulant treated (UKO and Ataja, 1996; Odunsi *et al.*, 1999; Iheukwumere and Herbert, 2003) vials from 20 chickens (10 male and 10 female) an age two month and 20 chickens (10 male and 10 female) of age six months healthy domestic fowl. Over a period

of January to December 2015 and the values obtain were analyzed statistically from significant difference using student 't'-test (Suedecor and Colhran, 1980)

RESULT AND DISCUSSION

The result of haematological values of domestic fowl is present in Table-1 and Table-2.

Table- 1. Haematological Parameter of Domestic Fowl Male and Female at Age of Two Months (Mean±SE)

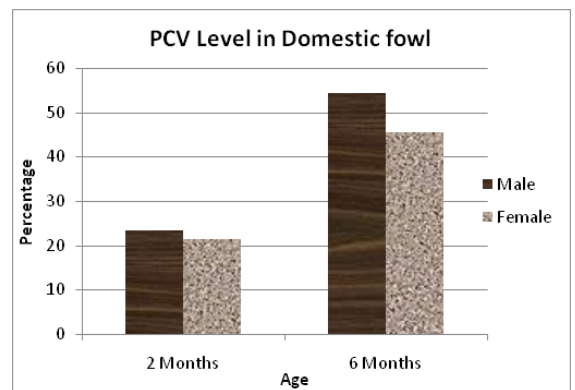
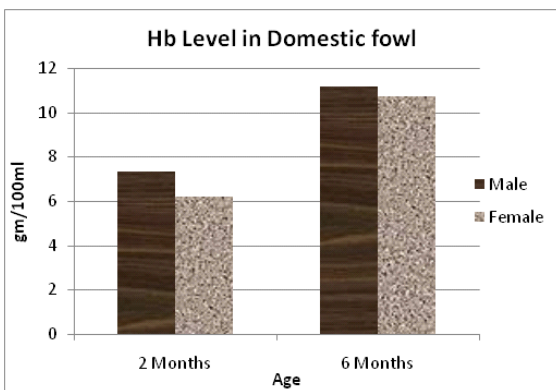
Types of Chicken	Hb (gm/100ml)	TEC (10 ⁶ /mm ³)	TLC (mm ³)	PVC (%)	MCV (μ ³)	MCH (μg)	MCHC (%)	DLC (%)				
								H	E	B	L	M
Male	7.343 ±0.080	0.8833 ±0.044	7550 ±534.6	23.37 ±0.674	260.0 ±5.292	83.131 ±2.517	32.20 ±3.408	61.47 ±0.779	2.033 ±0.066	7.357 ±0.155	26.33 ±0.633	2.077 ±0.095
Female	6.201 ±0.021	0.6721 ±0.054	6425 ±435.1	21.45 ±0.0241	319.19 ±2.134	90.26 ±2.10	28.90 ±2.565	56.02 ±0.243	1.80 ±0.012	5.052 ±0.107	18.51 ±0.124	1.086 ±0.045
Level of Significance	++	++	++	++	++	++	++	++	++	++	++	++

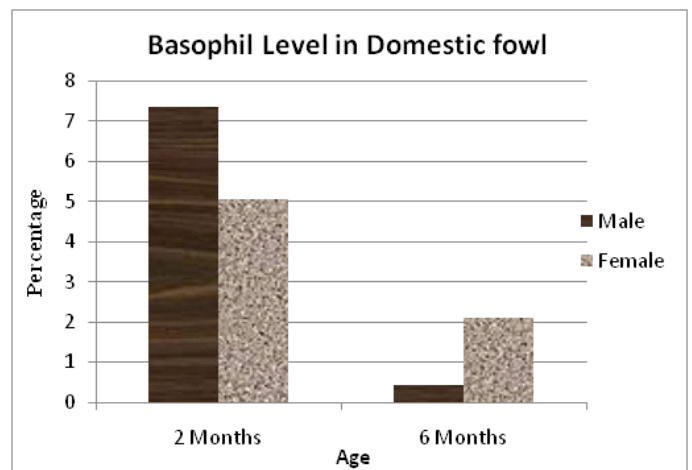
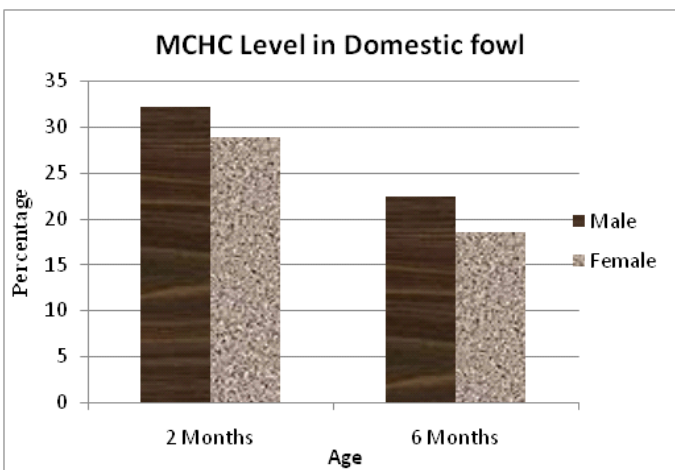
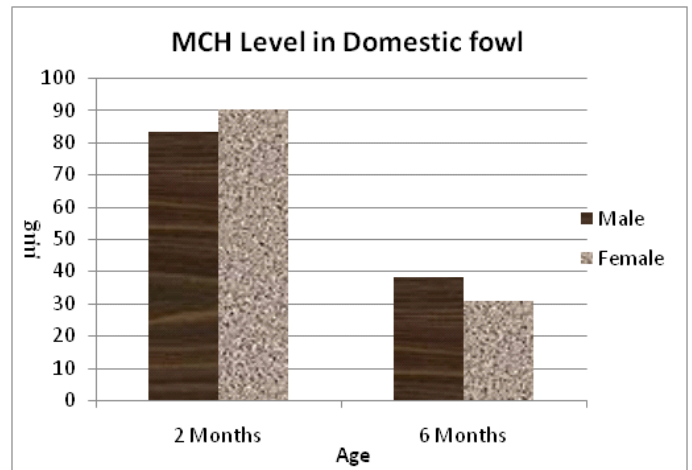
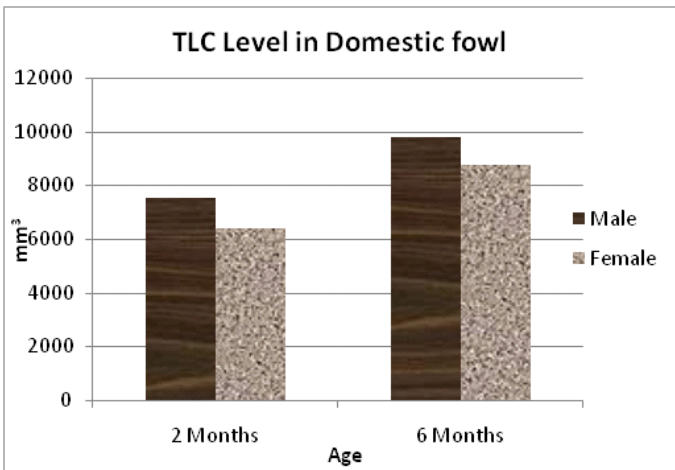
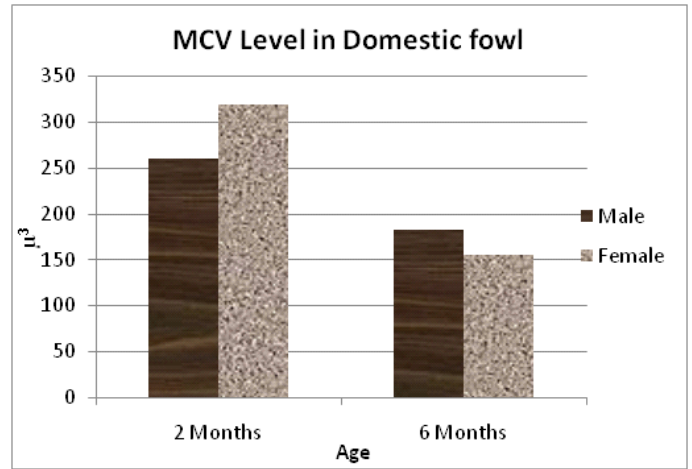
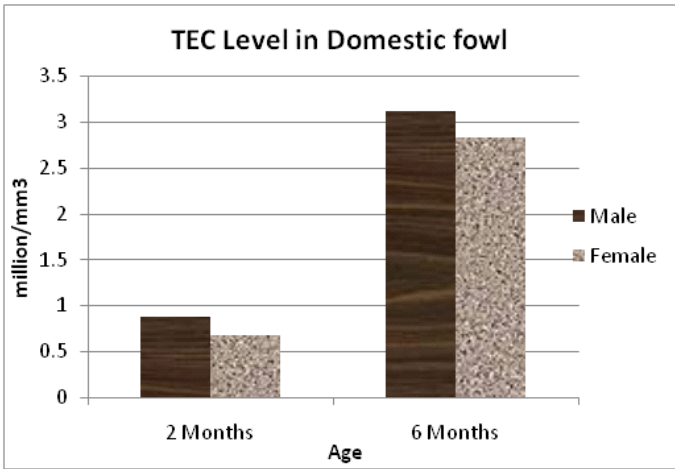
++ Indicates significant at 5% level, H=Heterophil, E=Eosinophil, B=Basophil, L=Lymphocytes, M=Monocytes

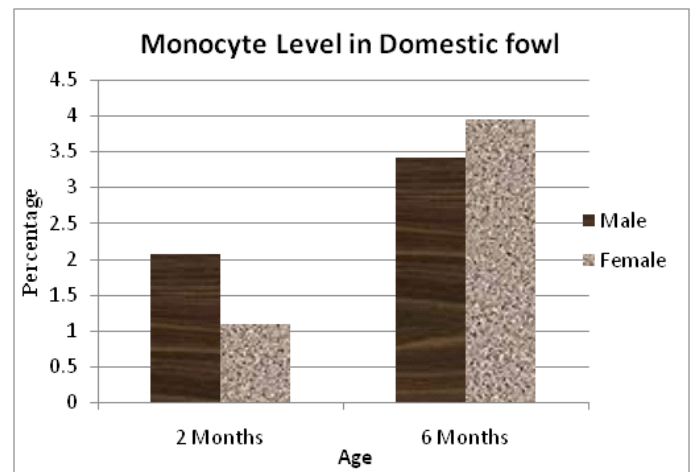
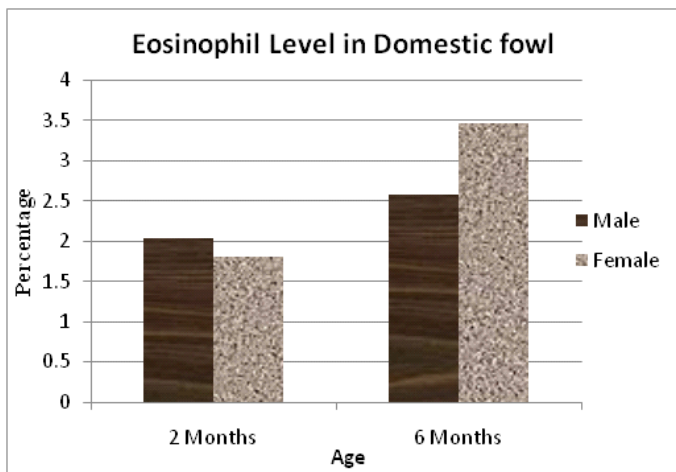
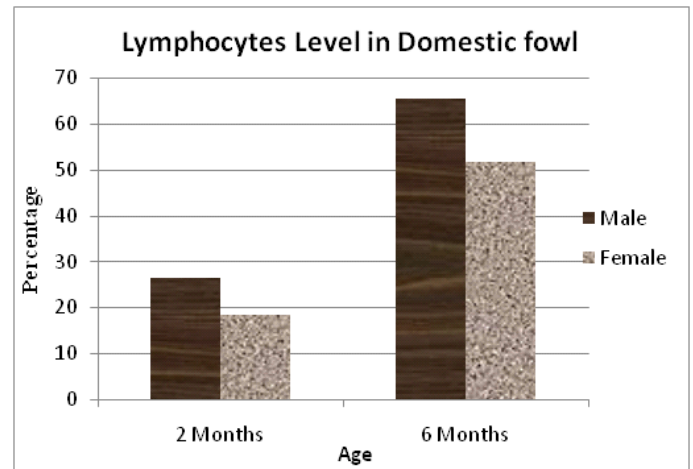
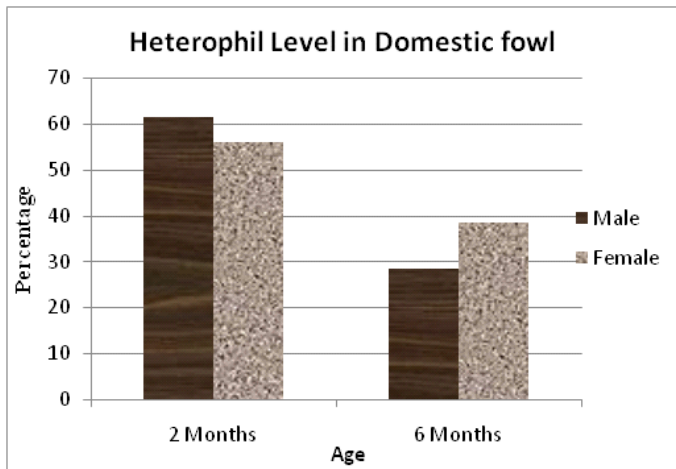
Table- 2. Haematological Parameter of Domestic Fowl Male and Female at Age of Six Months (Mean±SE)

Types of Chicken	Hb (gm/100ml)	TEC (10 ⁶ /mm ³)	TLC (mm ³)	PVC (%)	MCV (μ ³)	MCH (μg)	MCHC (%)	DLC (%)				
								H	E	B	L	M
Male	11.18 ±0.261	3.117 ±0.072	9820 ±277.4	54.50 ±0.624	182.7 ±5.398	38.33 ±3.756	22.40 ±1.097	28.43 ±0.552	2.583 ±0.072	0.4233 ±0.05	65.40 ±0.664	3.417 ±0.231
Female	10.72 ±0.245	2.833 ±0.060	8780 ±72.11	45.52 ±0.696	154.6 ±7.087	30.62 ±1.704	18.51 ±1.034	38.42 ±1.034	3.46 ±0.116	2.10 ±0.086	51.60 ±0.568	3.950 ±0.0763
Level of Significance	++	++	++	++	++	++	++	++	++	++	++	++

++ Indicates significant at 5% level, H=Heterophil, E=Eosinophil, B=Basophil, L=Lymphocytes, M=Monocytes







Haematological values shows that Hb, TEC, PCV, MCV, MCH, MCHC, increase with growth. The TLC (Total leucocyte count) and differential leucocytes count (DLC) for monocyte, esinophils and basophils did not deviate greatly from those reported for domestic fowl (Lucas and Jamroz, 1961). However the values for neterophils and lymphocytes count differ from jungle fowl. In the domestic chicken the percentage of lymphocytes is higher. Comprising 40 to 70% of total WBC count and is higher than any other white cell type. Heterophils shows negative correlation between growth and absolute count of heterophils as well as H/L ratio has been observed which agree with those reported (Alodon & Mashaly, 1999).

In conclusion, the present study indicates :

1. Growth or age affects the haematological profits

2. Sexually maturity effects were positive on haemogram (except heterophils and H/L ratio)

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