EFFECTS OF HIBISCUS CALYX EXTRACTS ON THE BLOOD CHEMISTRY OF BROILER CHICKENS

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ABSTRACT: The study was conducted to determine the effects of Hibiscus calyx extracts on the blood chemistry of broiler chickens. One hundred and twenty birds were used for the study. The birds were randomly assigned into 2 equal groups (n=60). Animals in group 1 serve as control and were given clean drinking water, birds in group 2 were administered Hibiscus calyx extracts in drinking water. The experiment lasted for 30 days. Mean values for Hemoglobin, packed cell volume, red blood cell and white blood cells were similar for both groups. There was no significant difference in the mean values of urea, total protein, albumin, Alkaline phosphatase, SGOT, SGPT and globulin ($P>0.05$). However, significant difference in the mean values of cholesterol was recorded ($P<0.05$). Findings of this research indicate that administration of Hibiscus calyx extracts result in lower blood cholesterol levels.

Key words: Hibiscus calyx, blood, chemistry, Broiler chickens.

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INTRODUCTION

Hibiscus Sabdariffa is widely cultivated in Nigeria, the calyx is used for preparation of a local drink called "zobo". It is also used in soups (Ibrahim et al; 2010). In Egypt and Sudan, the deep red tea from the calyx, called karkade is popular as a refrigerant; it is commonly used to make jellies and beverages (Leung and Foster, 1996). Dried red calyx of Hibiscus Sabdariffa is used as traditional medicine for its diuretic, hypocholesterolemic antihypertensive and mucolytic effects (Promphob et al; 2006). Aqueous extracts of the petals have been reported to exhibit antihypertensive and cardio protective effects in rats (Mahadevan et al; 2009). It is also reported to lower both systolic and diastolic pressure significantly in spontaneously hypertensive and normotensive rats (Onyenekwe et al; 1999). Water extracts of Hibiscus flowers were reported to have a relaxative effect on

the uterus (Franz and Franz, 1988). The objective of this study, therefore, is to evaluate the effects of oral administration of Hibiscus calyx extracts on the blood chemistry of broiler chickens.

MATERIALS AND METHODS

The experiment was conducted in the teaching and research farm of the college of agriculture lafia, nasarawa state. A total of 120 broiler chickens were used for the study (4 weeks old). The birds were managed on deep litter and commercial feed (vital) was used for feeding. Routine vaccinations and medications were administered appropriately. The birds were randomly assigned into 2 groups. Group 1 serve as control and were provided with clean drinking water. Birds in group 2 were administered Hibiscus extract in drinking water (treatment).

PREPARATION OF EXTRACT

The extract was prepared by boiling 6g of dried Hibiscus calyx in 4 litres of water for 10 minutes and allowed to cool. The extract is then filtered. The method is similar to the way the local beverage is prepared for human consumption. The experiment lasted for 30 days.

SAMPLE COLLECTION

At the end of the experiment, blood samples were collected from the wing vein using sterile disposal needles. Samples were placed into 2 separate sets of test tubes. Samples collected into test tubes containing ethylene diaminetetra acetic acid (EDTA) an anticoagulant were used for Hematological investigation. Hematological parameters determined include; Hemoglobin, packed cell volume, red blood cell counts and white blood cell counts. Serum biochemical characteristics determined include: Urea total protein, albumin, alkaline phosphatase scrum glutamate oxaloacetate, transaminase, serum glutamate pyruvate transaminase, cholesterol and globulin.

Statistical analysis:

Analysis of variance was done for all recorded parameters using appropriate sub routine of SAS (1999). Means were separated using least significant difference (LSD) method on the level $P<0.05$

RESULTS AND DISCUSSION.

Table (1): Effects Of Hibiscus Extract On Hermatology Of Broiler Chicken

CONTROL				TREAMENT		
Parameters	**Mean**	**Standard deviation**	**Sem**	**Mean**	**Standard deviation**	**Sem**
Hemoglobin Hb(gldl)	10.7^{a}	0.73	0.55	11.01^{a}	0.40	0.23
Packed cell volume (%)	32.00^{a}	2.45	1.53	33.60^{a}	1.53	0.88
Red blood cell count (10^{b}cells/mcmc)	3.19^{a}	0.18	0.71	3.50a	0.36	0.20
White blood cell count (10^{3}lc)	277.00^{a}	19.0	11.50	283.01	11.14	6.43

Sem: standard error of mean

Means within the same raw hearing different

Superscripts are significantly different ($P<0.05$)

Table (2): Effects of hibiscus calyx extract on serum chemistry of broilers

CONTROL				TREAMENT		
Parameters	**Mean**	**Standard deviation**	**Sem**	**Mean**	**Standard deviation**	**Sem**
Urea (mmo1/c)	1.23[a]	1.31	0.75	1.15[a]	0.25	0.15
Total Protein (g/e)	59.03[a]	3.76	2.19	60.05[a]	2.08	1.20
Albumin (g/l)	28.67a	3.06	1.76	29.60[a]	1.53	0.88
Alkaline phosphatase	17.67[a]	1.53	0.88	17.00[a]	1.00	0.58
SGOT (mm01/e)	3.00[a]	0.40	0.23	2.78[a]	0.29	0.17
SGPT(mmol/e)	1.97[a]	0.15	0.09	1.63[a]	0.31	0.38
Cholesterol (mmol/e)	4.40[a]	1.39	0.80	3.00[b]	0.36	0.21xx
Globulin (g/e)	25.77[a]	5.13	2.96	26.0[a]	2.65	1.53

The results of this study indicate that administration of Hibiscus extract had no significant effect on the mean values of all hematological parameters evaluated ($p>0.05$). mean values of cholesterol was found to be significantly lower in the treatment group ($p<0.05$). All other scrum biochemical parameters determined were however, similar between all groups. Similar studies have earlier demonstrated hypocholesterolemic and antioxidant effects of aqueous extracts in hypercholesterolemic rats and rabbits (Chen et al; 2003, Mahadevon et al; 2009). Daily consumption of Hibiscus extract has been reported to lower blood pressure in pre and mildly hypertensive adults and it is suggested to be an important component of the dietary changes recommended for people with hypertension (Mahadevon et al; 2009).The findings of this research indicate that lowering blood cholesterol levels may be the mechanism of the hypotensive action of aqueous hibiscus extracts. Normal levels of hematological and serum biochemical parameters suggests no risk of induced toxicity at the level used in this study

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