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Effects of Herbal Diuretics on Total Serum Protein, Blood Urea Nitrogen and Dropping's Moisture Percentage of the Broilers

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Abstract: Effect of herbal diuretic mixture (1, 2 and 3%) in drinking water and Nephrobiotic-DM protein (TSP, BUN and moisture percentage of dropping (DMP) of broilers. Non significant changes were observed on TSP values. However, BUN was significantly decreased on 5th day of phase 1 mid of lag phase and 3rd day of phase 2 indicating that both drugs have prolonged effect DMP was significantly higher on last day of the second phase. It was also significantly higher in the groups given 1.1 DM (3%) and Nephrobiotic-DM. This significant increases in the DMP indicated the efficacy of the time drugs used without harmful effects.

Key words: Herbal diuretic, Total serum protein, blood urea nitrogen, dropping's moisture percentage, Nephrobiotic-DM, *Tribulus terrestris*, *Cuminum cyminum*, Broiler

Introduction

Poultry industry is a good source of meat and eggs which fulfill the gap of protein shortage. In 1992, population of rural poultry was 65.50 million which produced 22.40 million eggs and 90000 metric tons meat (Qureshi, 1993). The poultry sector is facing different problems in which ascites is an important condition. It causes severe economic losses and is prevalent at large number of poultry farms with 22.15% mortality (Ahmad *et al*., 1986). In addition, poultry birds are constantly exposed to certain toxins, present in environment and feed. Therefore, to get rid of these problems diuretics or flushers are used in poultry. According to a WHO estimate, around 80% of the world's inhabitants depend on traditional medicines for their primary health care, majority of which use plants or their active principles (Hag, 1996). In the developing countries majority of the people use herbal medicines because modern health care services are not accessible, available or affordable to them. Traditional pharmacologists argue that the efficacy of herbal remedies is due to the synergistic activity among the several ingredients of herbal mixtures (Subramaniam, 1997). While considering the importance of herbal drugs, a study was conducted on herbal diuretic mixture and its comparison with a commercially available diuretic Nephrobiotic-DM.

Materials and Methods

Experimental birds: The study was conducted in the month of June 1998, at experimental room of Pharmacology Section, College of Veterinary Sciences, Lahore, Pakistan.

One hundred (100) a day-old broiler chicks were purchased and kept in the cages. Feed and water were provided *ad libitum*. On 28th day birds were divided into five equal groups (A, B, C, D and E). On the same day the birds of group A, B and C were given herbal diuretic mixture (HDM) at the rate of 10 ml, 20 ml and 30 ml per liter in drinking water for 5 days i.e phase-1. The birds of group D were given Nephrobiotic-DM at the rate of 0.5 grams/ liter in drinking water for 5 days. The birds of group E were kept as control.

At the end of phase-1, the birds were given a rest of one week, during which they were given normal feed and water.

Then the experiment was repeated on the same lines to confirm the observations noted during the phase-1.

Herbal diuretic mixture: The following diuretic medicines i.e *Tribulus terrestris* (Gokharu) and *Cuminum cyminum* (Zira sufed) were purchased from local market. Water extract of these medicines were made.

Nephrobiotic-DM: This drug was obtained from A. B. Pharma, Sahiwal, and is available in the form of water soluble granules.

Analysis of serum samples: Serum samples harvested during the experiment were analyzed for total serum protein and blood urea nitrogen photometrically according to Biuret method (Henry *et al.,* 1957) and Urease Berthlot calorimetric method respectively.

Droppings moisture percentage: For the determination of dropping's moisture percentage, "Dehydration mass loss method" using infrared moisture tester, was used (AOAC, 1984).

The data collected was subjected to analysis of variance to see any significant difference (Steel and Torrie, 1982).

Results and Discussion

Total Serum Protein: As shown Table 1, there was no significant difference in total serum protein among different groups i.e. A, B, C, D and E. Similar results were obtained for different days i.e. 1st and 5th day of phase-1, mid of lag phase, 1st and 3rd day of phase-2. It indicated that drugs used in this study had no untoward effects on the total serum protein. High protein levels are caused mainly due to dehydration, hence, diuretics used in this study had diuretic effect but no signs of dehydration.

Blood urea nitrogen: Blood urea nitrogen, which was normal on 1st day of the phase-1, significantly decreased on 5th day of phase-1, mid of lag phase and 3rd day of phase-2 (Table 1). It indicated that drugs used in this experiment had prolonged effect which extended to the 5th day of phase-1 and upto mid of lag phase. On last day of the experiment it decreased as compared to day 1st of phase-1.

Dropping's moisture percentage: Dropping's moisture percentage was significantly high on last (3rd) day of phase-2 as compared to 4th day of phase-1. Similarly it was significantly higher in the group C (3% diuretic mixture) and group D (Nephrobiotic-DM) as compared to control (group E).

In all the experimental groups droppings were thin and watery.

Table 1: Variations in the Values of Total Serum Protein, Blood Urea Nitrogen, Dropping's Moisture Percentage During and after Medication in the Broilers

Groups (concentrations)		Phase-I		Mid of Lag Phase	Phase-II	
		1st Day	5th Day		1st Day	3rd Day
A	A (1%)	3.77	3.13	3.60	3.60	3.12
Total Serum Protein (g/dl)	B (2%)	3.35	2.56	3.80	3.39	3.29
	C (3%)	3.36	2.92	2.98	3.08	3.15
	D	3.33	3.01	2.69	3.57	3.17
	E (Control)	2.81	2.88	3.50	3.18	3.03
B	A (1%)	11.70	6.95	9.20	12.20	11.72
Blood Urea Nitrogen (mg/dl)	B (2%)	8.01	6.22	6.18	5.51	7.66
	C (3%)	11.63	7.90	10.12	7.41	7.41
	D	16.13	8.82	6.60	11.77	4.78
	E (Control)	11.67	8.54	6.11	13.57	5.66

Groups (concentrations)		Phase-I		Phase-II	
		1st Day	5th Day	1st Day	3rd Day
C					
Dropping's Moisture Percentage (%)					
	A (1%)	76.01	76.99	74.30	79.2
	B (2%)	72.90	74.00	79.50	80.9
	C (3%)	80.70	81.00	77.30	81.1
	D	78.90	78.36	76.80	81.9
	E (Control)	74.70	75.60	71.90	77.9

This was in accordance with the results of Mayrs (1924) and Korr (1939) who reported that during diuresis, urine may be thin and watery.

This study has undoubtedly helped us to prepare a herbal diuretic mixture which is non-toxic and equally effective. It is recommended that diuretic mixture should be tried in other animals and on large scale in poultry farming.

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