Physiological performance under different housing system in Buffalo calves

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Abstract

A Study on physiological performance in different housing system has been evaluated. The overall values of MCH (μg) was found to be higher in control group than in treatment group but body length, heart girth and height were not found significant between the groups.

Keywords: Physiology, Performance, Housing system, Murrah buffalo,

Introduction

Murrah buffalo is one of the best breed in India. It has a circumscribe distribution comprising of Rohtak and Karnal in Haryana. The physiological parameters like MCH, MCHC and several factors were determined during experiment. The blood constituents can be used as an assessing adaptability of cattle to the environment. (Mansera *et al.* 1940).

Material and Methods

The present study was conducted on 10 (ten) Murrah buffalo calves kept under two different housing systems viz. loose housing and modified housing i.e. open site of the covered area from wall to roof was closed, using gunny bag to prevent free flow of hot and cold wind. The chaffed maize-straw or jowar were given 4 inch or 10 centimeter size during winter season. During summer, fine sand were given 4 inch or 10 centimeter height to prevent heat stroke and gunny bags were used to prevent direct sun light. The total experimental period was designed from first week of February to last week of May. Ad-lib fodder like berseem, green oat, green maize and silage was provided to all buffalo calves. During experimental period 10% of total ration dry feed viz. paddy-straw and wheat-straw was provided to all groups of animals. The control group I animals were kept loose housing system and group II (treat-ment) in modified housing system. The data was collected for MCH, MCHC and body measurement with body weight gain (g/day) on weekly interval was collected for MCH, MCHC and body measurement with body weight gain (g/day) on weekly interval. The growth parameters of buffalo calves were recorded by electronic balance fortnightly. The data gathered were subjected to standard statistical analysis.

Result and Discussion

The physiological parameters of Murrah buffalo calves at different body weight at different age groups as mentioned earlier in group I and group II are presented in table. The mean values ±SE of hematological and body measurement have been shown in table 1 to 4.

The measurement did not differ significantly within a particular age group, the overall mean value were 69±10.81 and 50.481±10.3 during both period ANOVA revealed that the change in MCH were not significant (P<0.05). the overall values of MCH ((μg) were higher in control group animal and lower in experimental group. Rowland et al. (1974), Kappel *et al.* (1984) and Merai *et al.* (1991) reported that hematological MCH percentage decreases during heat stress in domestic animal.

Table:-1. Mean value ± S. E. for Mean Corpuscular Hemoglobin (MCH) and Mean Corpuscular Hemoglobin Concentration (MCHC) during period I and period II and overall.

Attributes	Period - I		Period - II		Overall	
	Group I	Group II	Group I	Group II	Group I	Group II
MCH	17±1.73	17.55±0.08	19.84±0.03	20.27±0.62	18.42±0.01	18.91±0.96
MCHC	33.64±0.58	34.51±1.73	37.37±0.11	40.78±1.11	35.50±1.31	37.64±2.97

Table - 2.

Attribute	DMI	Body Length	Heart Girth	Height at Wither	Body Weight	THI
Body Length	0.798**	1.00	--	--	--	--
Heart Girth	0.792*	0.997**	--	--	--	--
Height at Wither	0.789*	0.995**	0.993**	1.00	--	--
Body Weight	0.820**	0.995**	0.995**	0.989**	0.985**	1.00
Thermal Humidity Index	0.044	0.088	0.086	0.137	0.022	1.00

Total no. of observations 14. (P<0.05)* (P<0.01)**

Body measurements

The mean value of body length was 83.70±1.48 and 86.00±2.37 cm in group-I and group-II respectively during period I. The corresponding value during period II was 96.35±1.67 cm and 99.85±2.56 cm respectively. The overall mean were 90.02±0.99 cm and 92.92±0.99 cm respectively in group-I and group-II.

The mean heart girth values were 142±3.74 cm and 140.30±2.87 cm in gr.-I and gr.-II respectively during period-I. The corresponding values were 151.55±4.33 cm and 152.45±3.73 cm in group-I and group-II. The overall mean values were 146.87±1.41 cm and 146.37±1.47 cm in group-I and group-II respectively.

The mean values of height at wither were 99.15±3.36 and 108.30±1.58 in gr.-I and gr.-II respectively during period I. During period II the corresponding value were 114.80±1.58 and 119.10±1.70 cm in group-I and group-II respectively. The overall mean values were 106.97±1.12 cm and 113.70±1.12 cm in group-I and group-II respectively. ANOVA on table II data revealed that body length (cm), heart girth (cm) and height at wither were significant between the groups during period I and period II.

When the data was subjected to correlate between DMI (Dry Matter Intake), in body measurements and THI (Thermal Humidity Index), observed that body measurement were positively correlated with weight (Table no.-1). There observations were in agreement with finding of Shrikant (2000). Correlation coefficient between DMI, body length, heart girth, height at wither and THI in both period I and period II. Parekh et al. 1976 reported that correlation coefficient of body weight with height at withers, heart girth and body length were r=0.26, r=0.86, r=0.86 respectively.

References

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Table - 3. Body length, heart girth and height at wither during both period I and II.

Attributes (Cm)	Period - I		Period - II		Overall	
	Group I	Group II	Group I	Group II	Group I	Group II
Body Length	83.70±1.47	86.00±2.37	96.35±1.67	99.85±2.56	90.02±0.99	92.92±0.99
Heart Girth	142.00±3.74	140.30±2.87	151.55±4.33	152.45±3.73	146.87±1.41	14637±1.41
Height at Wither	99.15±3.36	108.30±1.58	114.80±2.67	119.00±1.70	106.97±1.12	113.70±1.12

Table - 4. Overall ANOVA for body length, heart girth and height at wither during both period I and II.

Source	Diff.	M.S.S.	Heart Girth	Height at Wither
Between animals	4	377.93	888.89	1383.300
Between groups	1	5.00	168	904.51
Between fortnights	5	437.87	646.20	634.68
All effect interaction	5	6.71	2.54	20.54
Error	60	84.53	31.38	42.99