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Effect of housing systems on haematology of early lactating red Kandhari cows

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Abstract

The study was carried in summer season on early lactating Red Kandhari cows at Livestock Farm Complex, College of Veterinary and Animal Sciences, Parbhani. This area comes under temperate zone and this study was carried to see impact of housing systems in summer season on haematology of early lactating Red Kandhari cows. Fourteen animals were equally divided and subjected in stall fed and loose housing system. Weekly blood sampling was carried to analysis of haematological constituents. Statistical analysis showed significant ($P<0.05$) difference for PCV, Hb, Monocyte and eosinophil while for other haematological parameters it was non-significant ($P>0.05$).

Keywords: Haematology, housing systems, red Kandhari cows, summer season

Introduction

In dairy farming, sound health status is most important and it can be maintained in specific condition is one of the criteria for welfare assessment. It is very important factor for management of feeding animals and well-set housing system which directly results to increase in milk production, reproduction, free from disease and mortality, feed appetite and homeostasis for being proper health status ^[1]. For better production, feeding and housing system is most important. High temperature it leads to decrease in production so housing system is main factor for decreasing body temperature ^[2].

Red Kandhari cow is local breed which is quite adopted in temperate condition but prolonged exposure of high temperature and humidity challenged for animals for their normal physiological status and thermoregulation. The aim of this study was to estimate the effect of housing system and temperature humidity index on haematology of blood.

Materials and methods

The study was conducted on 14 early lactating Red Kandhari cows which were equally divided in to stall fed and loose housing system of 7 each at Livestock Farm Complex, College of Veterinary and Animal Sciences (MAFSU), Parbhani. All animals were offered *adlib* drinking water and also regular feeding of concentrates, roughages and green fodder. Blood samples were collected weekly at morning hours in EDTA tubes.

Analysis

All the collected blood samples of weekly were analyzed by fully automatic "ERMA 210" haemato-analyzer to see TEC, TLC, PCV, Hb, Lymphocyte, Neutrophil, Monocyte, Eosinophil and Basophil.

Statistical analysis

Data were analyzed by unpaired t-test by statistical software wasp 2.0.

Results and Discussion

The mean \pm SE of blood constituents of early lactating Red Kandhari cows in stall fed and loose housing system is presented in Table 1 and depicted in Fig. 1, 2 and 3.

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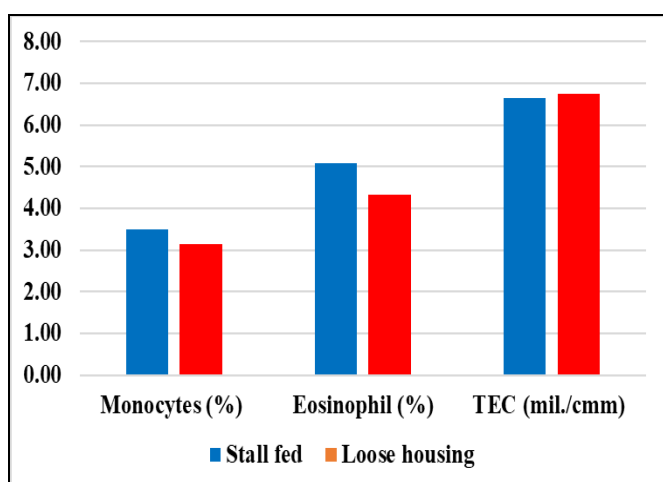
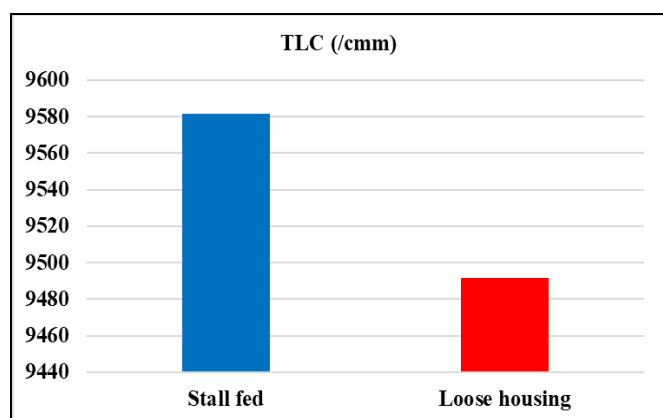
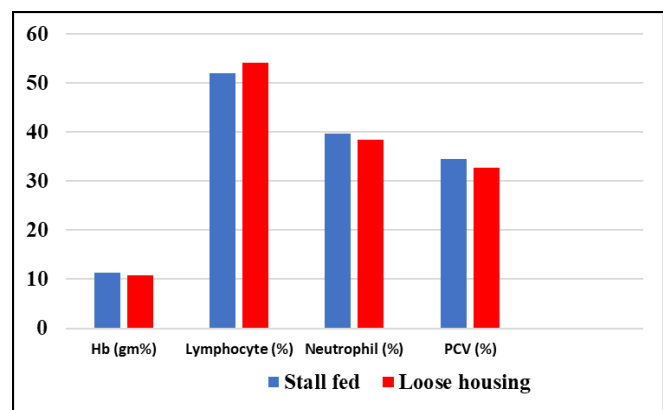
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Table 1: Mean \pm standard error for weekly haematological parameter between stall fed and loose house in early lactating Red Kandhari cows.

	Stall fed	Loose house	Level of significance
TEC (mil./cmm)	6.64 \pm 0.08	6.75 \pm 0.10	
TLC (/cmm)	9581.71 \pm 265.78	9491.46 \pm 286.61	
PCV (%)	34.45 \pm 0.33 ^a	32.73 \pm 0.36 ^b	**
Hb (gm%)	11.34 \pm 0.11 ^a	10.81 \pm 0.11 ^b	**
Lymphocyte (%)	39.62 \pm 1.10	38.48 \pm 1.09	
Neutrophil (%)	51.96 \pm 1.07	54.10 \pm 1.08	
Monocyte (%)	3.50 \pm 0.09 ^a	3.13 \pm 0.09 ^b	*
Eosinophil (%)	5.09 \pm 0.19 ^a	4.32 \pm 0.19 ^b	**
Basophil (%)	0.00 \pm 0.00	0.00 \pm 0.00	

a, b Means with different superscripts in a row differ significantly * P <0.05; ** P <0.01

**Fig 1:** Monocytes, eosinophil and TEC in stall fed and loose housing system in early lactating Red Kandhari cow.**Fig 2:** TLC in stall fed and loose housing system in early lactating Red Kandhari cows**Fig 3:** Hb, lymphocyte, neutrophil and PCV in stall fed and loose housing system in early lactating Red Kandhari cows

Non-significant difference (P >0.05) was found for TEC but contradictory result was reported [3, 4, 5]. TEC value from both the group were higher than normal range but these values are not statistically different this may be due to adaptation of breed in hot environment and present study showed that there was no effect of housing on TEC.

Non-significant difference (P >0.05) was found for TLC and This result similar [6, 7] but contradictory result was reported by some authors [1, 4, 5, 8]. This may be due to locality of breed which is not affected by environmental temperature [6].

Significant (P <0.01) difference was found for PCV and similar with some authors [3, 9, 1, 4, 5] but contradictory result was found by author [6]. This may be due to reason of changes occur in water balance in body [10].

Significant (P <0.01) difference was found for haemoglobin in stall fed and loose housing system. This result agree with some authors [9, 1, 5] but contradictory result was reported by author [4]. This may be due to severe dehydration in animals kept in GI [11].

Non-significant difference (P >0.05) was found for lymphocyte. This result agree with some author [4, 7] but contradictory result was also reported [5, 8]. This may be due to locality of breed which is not affected by environmental temperature [7].

Non-significant difference (P >0.05) was found for neutrophil. This result agree with some authors [4, 5, 7]. This may be due to local breed and which is adapted in hot environment as a result neutrophil was not affected [7].

Significant (P <0.05) difference was found for monocyte. This result in agreement with some of authors [4, 5] but also contradictory result was reported [7]. This may be due to cortisol secretion in stressed condition in GI [12].

Significant (P <0.01) difference was found for eosinophil. This result is same [5] but also this result is contradictory [4, 7]. This may be due to insect vector in GI [13].

Non-significant difference (P >0.05) was found for basophil. This result agree for some authors [14, 4, 7] but also contradictory result was reported [5]. This may be due to least affecting variable by heat stress.

Conclusion

Finally, it is concluded that loose housing system is superior over stall fed as there was dehydration and it will result in decreased production. For farmers, it will beneficial to rear cattle in loose housing in summer season.

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