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Effect of bypass protein on reproductive performance of Surti buffalo heifers

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Abstract

With the Feeding effect of formaldehyde (HCHO) treated (Bypass) protein in buffalo heifers were studied in Surti buffalo heifers (20) of 19-21 month of age with mean body weight (165 ± 5.43) on reproductive performance. Individual feeding of all animals were followed with basal diet along with required quantity of compounded concentrate mixture (CCM). Animals were fed with the concentrate mixture containing different level of HCHO treated protein which were divided into four homogenous groups and designated as CON (control; CCM), FT-25 (CCM containing HCHO treated bypass protein @ 25%), FT-50 (CCM containing HCHO treated bypass protein @ 50%) and FT-100 (CCM containing HCHO treated bypass protein @ 100%). Heifers fed on HCHO treated protein diet at higher level (FT-50 and FT-100) attained puberty earlier ($P < 0.05$) than CON which consequences successful conception rate.

Keywords: Surti buffalo heifers, bypass protein, reproductive performance

Introduction

Reproductive performance is the most important factors in determining the profitability of dairy animals as it generates future stock and is an essential pre-requisite for lactation (Shelke *et al.*, 2011) [7]. Buffaloes have potential to gain at rates of 400-600 g/day after about 6-8 months of age and can attain 300-400 kg body weight suitable for breeding at about 24 months of age. But in the majority of dairy buffaloes first calving occurs at about 4-6 years of age which may be attributed to poor nutrition and growth rate (Ingawale *et al.*, 2004) [1]. So that high protein is must to provide in their diets which is major component of body tissues as an essential nutrient for growth as it provides the amino acids (Promkot *et al.*, 2007) [4].

Materials and Methods

A total of twenty, Surti buffalo heifers of 19-21 month of age with mean body weight 165 ± 5.43 kg were selected. Experimental heifers were divided into four homogenous groups (five animal per group) based on their individual body weight using complete randomized design. Individual feeding of all the animals was followed with basal diet containing green roughage (5 kg), dry roughages (*ad lib*) along with required quantity of compounded concentrate mixture (CCM) to meet their protein and energy needs for growth as per ICAR (1998).

The main protein source of CMM (rapeseed) was treated with HCHO @ 1.0ml/kg of crude protein (CP) with aim to protect its ruminal degradation and replaced with untreated rapeseed @ 25, 50 and 100% in FT-25, FT-50 and FT-100 CMM, respectively. The respective CMM was prepared and procured from Dudhsagar District Cooperative Milk Producers' Union Limited (Dudhsagar Dairy), Mehsana, Gujarat. The animals were offered with these CMM containing different level of HCHO treated protein and designated as CON (control; CCM), FT-25 (CCM containing formaldehyde treated bypass protein @ 25%), FT-50 (CCM containing formaldehyde treated bypass protein @ 50%) and FT-100 (CCM containing formaldehyde treated bypass protein @ 100%).

Reproductive performance of heifers was assessed by estimating their pubertal age and its body weight and thereafter naturally serving with a breeding bull to get an idea of conception rate. Pubertal age was taken as age of the heifers when they showed the first heat. The served heifers not exhibiting estrus sign for two next terms were supposed to have conceived and designated as pregnant.

Further pregnancy was confirmed by per rectal palpation after 60 days of service. The conception rate was expressed as the proportion of animals conceived out of total served.

Observations & Results

Reproductive performance of buffalo heifers were recorded in terms of pubertal (signs of first heat) age and body weight

followed by natural service through a breeding bull to monitor conception rate as showed in table.

Reproductive performance by buffalo heifers fed on formaldehyde treated protein

Attribution	Groups				SEM	P value
	CON	FT-25	FT-50	FT-100		
Pubertal age (days)	819.00 ^{ab} ±22.76	808.00 ^{ab} ±24.81	769.80 ^a ±12.10	763.20 ^a ±13.72		0.143
Pubertal body weight (kg)	249.00±9.24	244.00±8.61	241.00±7.33	246.00±6.69		0.676
No. of animal conceived	4	4	5	4	NA	
Conception Rate	80	80	100	80	NA	

Heifers fed on HCHO treated protein diet at higher level *i.e.* 50 and 100% revealed lower ($P < 0.05$) pubertal age confirming the impact of HCHO treatment on reproductive traits. In present experiment, an early attainment of puberty in HCHO treated dietary groups (FT-50 and FT-100) could be justified on the basis that as animals of these group have better growth rate and puberty is a considered as major function of body weight (Jainudeen, 1993) [2]. Hence, higher weight gains through the HCHO treated protein feeding might have supported the pubertal age (McShane 1989; Schillo 1992; Radcliff 1997) [3, 5, 6].

On providing the natural service to heifers with breeding bull, all heifers of FT-50 get conceived, while 4 animals have been conceived in CON, FT-25 and FT-100.

Conclusion

It is concluded from the results that feeding of bypass protein liable to improves the reproductive performance by attaining the puberty as early along with positive result on conception rate.

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