

Studies on Total Serum Protein on Feeding of Complete and Conventional Diet to Calves

N.S. Deshmukh¹, V.K. Goley², V.G. Vairagar³ and A.M. Deshmukh⁴

ABSTRACT: The complete feed is new approach feeding system in the diet of animals. The cotton straw was base material in the diet of crossbred calves. Feeding trial was conducted for period of three month on fifteen crossbred calves divided in to three groups according to age. Treatment T₁ contain 45% cotton straw level and T₂ contain 30%, Treatment T₃ contain wheat straw + concentrate mixture, treatment T₄ consisted of same feed as T₁ but offered 10% extra Dry allowance over requirement while in T₅ same feed as that of T₂ was offered with 10% extra DM allowances. Total protein was carried out using Auto analyser in the laboratory. The Average serum total protein in blood of calves on different feeding system over period of 90 days were increase from 4.567 to 6.467, 4.667 to 6.033, 4.533 to 5.367, 4.56 to 6.267 and 4.667 to 5.900 gm./DL in T₁, T₂, T₃, T₄ and T₅ groups respectively. Results indicated that in all intervals testing of TSP level were significantly higher in calves reared on complete diet with 45% Cotton straw T₁ than that of other feeding groups.

INTRODUCTION

Animal husbandry is an integral part of crop husbandry. Animal rearing is not a separate activity but a subsystem within whole farming system. Livestock depends largely on crop residues and grazing either inside the forest or outside the forest. Today in general there is a quantitative gap between fodder availability and requirement for feeding the animals. Moreover there is unbridgeable gap between quality requirement of feed and there availability. The grazing resources are declining at the rate of 1.5million ha/year.

In such a situation there is necessity to choose the new feeding system approach. The complete feed is the new approach feeding system in the diet of animals. In the Vidharbha region cotton is the major crop, after last picking of cotton usually it is thrown away from the field or use as fuel purpose. After chaffing and grinding it can be effectively use in the complete diet and improve its palatability and digestibility in the diet of animal and may be save the national income. Keeping this view in mind present study is planned.

MATERIAL AND METHODS

Complete feed was prepared by using cotton straw as a base material, the different ingredient of concentrate were mixed to it to form complete feed this complete feed prepared with different proportion of cotton straw *i.e.* 45 (T₁) and 30 (T₂) per cent was compared with control treatment diet (T₃). The control diet consisted feeding of wheat straw + concentrate mixture. Treatment T₄ consisted of same feed as that T₁ but offered 10 per cent extra DM allowances over requirement. While in treatment T₅ same feed as that of T₂ was offered with 10 per cent extra DM allowances. All the animals from each group were subjected to blood connection, 2 ml of blood was collected from Jugular vein in sterile vial containing 1-2 drops of EDTA solutions at the rate of 5 ml. of blood. For separation of serum above 10-15 ml of blood was collected in sterile test tube without any anticoagulant. Collected blood was allowed to clot in the test tube in slanting position at room temperature for 24 hr. The clean serum was separated in oven dried vials. The samples were

¹ SMS-ASDS KVK Jalgaon 425001.

² Ex. Associate Prof. Department of Animal Husbandry and Dairying Dr PDKV Akola.

³ SMS-Agril. Extn KVK Jalgaon 425001. Corresponding author, E-mail : vishalgv@rediffmail.com

⁴ Ex Head Department of Animal Husbandry and Dairying Dr PDKV Akola.

Table 1
Average Total Serum Protein (gm./DI) on Feeding Complete and Conventional Diet to Calves.

Treatments	Mean values of TSP						
	0	15	30	45	60	75	90
<i>T</i> ₁	4.567	4.833	5.400 ^a	5.567 ^a	5.967 ^a	6.067 ^a	6.467 ^a
<i>T</i> ₂	4.667	4.800	4.933 ^b	5.133 ^b	5.467 ^b	5.633 ^b	6.033 ^b
<i>T</i> ₃	4.533	4.633	4.800 ^b	5.100 ^c	5.133 ^c	5.267 ^c	5.367 ^c
<i>T</i> ₄	4.567	4.667	5.167 ^c	5.700 ^a	5.900 ^a	6.200 ^a	6.267 ^a
<i>T</i> ₅	4.667	4.700	4.900 ^b	5.233	5.400 ^b	5.500 ^c	5.900 ^e
'F' test	N.S.	N.S.	Sig.	Sig.	Sig.	Sig.	Sig.
G.M.	4.600	4.727	5.040	5.347	5.573	5.733	6.007
S.E. (m) +-	0.0453	0.057	0.0236	0.0357	0.641	0.0853	0.0650
CD at 5%	N.S.	N.S.	0.0769	0.1166	0.2091	0.2782	0.2119
C.V. %	1.730	2.098	0.810	1.58	1.993	2.577	1.874

Means with similar superscripts in column do not differ significantly.

properly labelled and vials were stored in deep freezers at 20°C until use for biochemical analysis. Total protein was carried out using Auto Analyser in the laboratory.

RESULT AND DISCUSSION

Data indicated the average serum total protein in the blood of calves on the different feeding systems over a period of 90 days in the Table 1. Analysis of variance for TSP in Table 2. It is observe on the Table 1 revealed that the average total serum protein value at the start of trial was ranging from 4.533 to 4.667 gm./DI, in the blood of calves. The values appeared within the normal range of 4 to 7 gm./DI. However the total serum protein content at the age of 6 to 12 month in 7.9 gm./DI which reduce to differ according to age of the animal in general total serum protein (TSP) in blood of calves showed a increasing trend over the experimental period. The values increase from 4.567 to 6.467. 4.667 to 6.033, 4.533 to 5.367, 4.567 to 6.267 and 4.667 to 5.900 gm./DI in *T*₁, *T*₂, *T*₃, *T*₄ and *T*₅ groups respectively. Results indicated that in all the intervals testing of TSP level were significantly higher in calves maintain on complete diet first with 45 per cent cotton straw (*T*₁) than that of other feeding groups.

Moreover TSP level in blood at the end of 90 days trial were significantly higher by 20.49 per cent under *T*₁ calves as compared to TSP level of calves in conventional group *T*₃. Venkatmuni and Rammhohan (1988) observed a value of 7.41 gm./DI TSP in 9 to 12 month age heifers. Moreover Singh *et al* (2003) reported to TSP content between 6.52 to 7.41 gm./DI in adult crossbred cattle maintain on wheat bran diet.

The present values since to be on lower side that these values. Probably the age of animals might be the reason as in the present study younger age animals that of their study were used for the experiment. Patil *et al* (2000) opined that total serum protein increase up to 12 months of age in Gir calves and 9 month of age in crossbred cows. The increase in TSP was the indication of earlier physiological maturity in crossbred's calves over Gir calves. While Ramkrishna (2003) observed non-significant difference among the most of blood chemical constituent under different management condition. The calves reared on complete diet-I with 45 per cent cotton straw *T*₁ may attain physiological maturity earlier than the calves fed with conventional diet.

Table 2
Analysis of Variance for Total Serum Protein (TSP)

Source	df	Mean sum of squares (TSP gm./DI)						
		0	15	30	45	60	75	90
Days								
Blocks	2	0.042	0.011	0.050	0.025	0.061	0.033	0.073
Treatments	4	0.031 NS	0.022 NS	0.176*	0.219*	0.372*	0.458*	0.526*
Error	8	0.026	0.009	0.002	0.004	0.012	0.022	0.012
Total	14							

*Significant at 5%. NS-Non Significant

CONCLUSION

It was concluded that total serum protein content appeared at age of 6 to 12 months is 7.9 gm/Dl which reduce to different according to age of animal in TSP showed increasing trend. TSP level in blood at the end of 90 days trial were significantly higher by 20.49 percent under T_1 group calves as compared to TSP level of calves in conventional group T_3 . The calves reared on complete diet I with 45 percent cotton straw T_1 may attain physiological maturity earlier than calves fed on conventional diet.

REFERENCES

Patil, S.P., B.A. Talvetkar, B.T. Deshmukh, and A.S. Nagvekar (2000), Studies on certain blood values during growth in Gir Crossbred calves. *Indian Vet. J.* 77: 300-302.

Ramkrishna, K.V. (2003), Studies on blood chemical constituents of crossbred jersey cows maintained under varied nutritional management. *Indian Vet. J.* 80: 698-699.

Singh, A.S., D.T. Pal, K.C. Das, P. Singh and N. N. Pathak (2003 a), Effect of feeding two levels of wheat bran on blood biochemical changes in crossbred cattle. *Indian Vet. Med. J* 27: 20-24.

Venkanmuni. A. and RammohanRao (1988), Studies on certain blood constituents in prepuberal crossbred heifers. *Indian Vet. J.* 65: 360.

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