BODY COMPOSITION OF CAMEL CALVES IN DIFFERENT REARING PRACTICES

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Growth of animals is generally measured either from an increase in body weight or increase in body frame but it ignores the composition of gain in term of deposition of fat, protein and ash as bone minerals in component cells. Sometimes composition of gain is required in growing / fattening animals for deciding market value of meat. In the present study attempts has been made to compare and establish reference values for body composition of growing camels reared in two different management practices.

Materials and Methods

Ten camel calves of about 21 month old were equally divided into two groups of 5 each. Camel calves of Gr. I were reared under intensive management system exclusively on crop residues of dew bean and clusterbean while, Gr. II calves were maintained on grazing in addition to stall feeding with same crop residues. Daily feed intake and body weights at fortnightly intervals were measured. The study was continued for 182 days. Body composition was determined by water dilution technique in which antipyrine dye was used as indicator. Ten per cent solution of antipyrine (2,3-dimethyl-1-phenyl-3-pyrazolene-5-1-phenozone) was injected slowly into the jugular vein @ 30 ml per 100kg body weight.

Blood samples were collected at 0,2,3,4 and 5 h. post injection from opposite side in test tube containing heparin as anticoagulant. Plasma antipyrine concentration was estimated with the method described by Sastry *et al.*, (1999). Empty body weight was determined by using the equation given by Bensadoun *et al.*, (1963).

Empty body weight : -0.943×-4.076
W where, X = Live body weight

Fat, protein and ash content was then calculated by employing the equation suggested by Reid *et al.*, (1963).

$Y = 355.88 + 0.356 X - 202.91 \log X$

Y = Fat in empty body (%), X = Water in empty body (%)

$P = 0.2903 \times 0.477$

P = Total protein (%), X = Water in empty body (%)

Body ash = $100 - (\% \text{ body water} + (\% \text{ Body fat} + (\% \text{ Body protein}.$

The data was subjected for statistical analysis using SPSS- 10.0 software.

Results and Discussion

Body composition analysis revealed mean values of 71.15 ± 0.28 % for body water, 5.31 ± 0.25 % for body fat, 20.17 ± 0.08 % for protein and 3.35 ± 0.17 % for ash

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Table : Body weight and % body composition of camel calves in two different management practices.

Parameters	Gr. I Intensive Management Practices (n=5)	Gr. II Semi-Intensive Management Practices (n=5)	Mean $\pm$ SE
Body weight (kg)	286.18 $\pm$ 10.29	307.05 $\pm$ 9.71	296.61 $\pm$ 10.00
ADG (g/d) over 182 days	342.64 $\pm$ 38.82	489.71 $\pm$ 46.19	416.17 $\pm$ 42.50
% Body composition			
Body Water*	71.65 $\pm$ 0.31	70.64 $\pm$ 0.37	71.15 $\pm$ 42.50
Body Fat*	4.87 $\pm$ 0.27	5.77 $\pm$ 0.33	5.31 $\pm$ 0.25
Body Protein*	20.32 $\pm$ 0.09	20.03 $\pm$ 0.11	20.17 $\pm$ 0.08
Body Ash*	3.15 $\pm$ 0.15	3.56 $\pm$ 0.25	3.35 $\pm$ 0.17
Fat deposited (g/day)*	7.79 $\pm$ 0.44	9.23 $\pm$ 0.53	8.51 $\pm$ 0.40
Energy deposited (Kcal/day)	72.92 $\pm$ 4.13	86.39 $\pm$ 4.96	79.65 $\pm$ 3.78
Protein deposited (g/day)**	34.56 $\pm$ 2.05	56.07 $\pm$ 2.73	45.31 $\pm$ 3.93
Energy deposited (Kcal / day)	194.21 $\pm$ 11.53	315.10 $\pm$ 15.39	254.65 $\pm$ 22.09
Total deposition of energy (Kcal / day)	267.12 $\pm$ 11.63	401.49 $\pm$ 17.08	334.30 $\pm$ 24.42

** Significant at 1% level, * Significant at 5% level, NS : Non-significant; n = no. of camel calves.

(Table). The per cent body composition showed significant difference ($P < 0.05$) between two groups. Average daily body weight gain over 182 days was significantly ($P < 0.05$) higher in calves of Gr. II (489.71 $\pm$ 46.19 g/d) reared semi-intensively than intensively reared Gr. I (342.4 $\pm$ 38.82 g/d). Bhakat *et al.*, (2006) also found similar significant increase in body weight and average growth rate in semi-intensive system in comparison to intensive system. However, contrary to present study better growth performance reported by Karim *et al.*, (2007) in intensive system than semi-intensive system could be due to higher plane of nutrition. In this study, better performance of camel calves of Gr. II could be due to availability of more nutrients from rangeland areas and also due to the selective browsing nature of camels that

enables them to eat more tender and nutritious (protein and minerals rich and low in fibre) part of the plant.

As increase in body weight is related to increase in cell mass. Hence, calves of Gr. II that gained more weight had more deposition of fat (9.23 $\pm$ 0.53 g/d) than calves of Gr. I (7.79 $\pm$ 0.44). Rajkumar and Agnihotri, (2005) reported that adequate feeding led to more fat and protein deposition and less moisture in meat. Likewise, deposition of energy in terms of deposited fat and protein was significantly more in Gr. II calves than Gr. I calves. In semi intensively reared Gr. II, the calves deposited significantly ($P < 0.01$) more protein (56.07 $\pm$ 2.73 g/d) compared to calves of Gr. I (34.56 $\pm$ 2.05 g/d) reared intensively which is desirable in growing

animals (Diaz *et al.*, 2001).

Thus, the present study revealed better performance of camel calves in terms of rate of gain and per cent body composition in semi-intensive than intensive system.

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