

Studies on the optimum and higher levels of digestible protein feeding and on the partial replacement of feed nitrogen with urea in growing Kankrej calves.

Submitted to Gujarat Agricultural University
1975

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The present study was undertaken to determine whether the NRC (1966) recommendations of DP can support the optimum growth of young Kankrej calves and to see whether increasing the DP level by 20 per cent or replacing 25 per cent of optimum level of DP requirements with urea is advantageous or not.

Eighteen growing Kankrej calves ranging between 5-11 months of age and 80-145 kg body weights were grouped into 3 groups of 6 calves each (3 females and 3 males). The first group (T₁) was fed DP as suggested by NRC (1966). In the second group (T₂) 20 per cent higher level of DP was fed, while in the third group (T₃), 25 per cent of the DP fed at the NRC level was replaced with urea.

The experiment was conducted for 36 weeks. During this period the effect of the treatments on the major blood constituents and on the growth of the calves as a whole, as well as of male and female calves was studied. The effect of non leguminous and leguminous fodder, particularly in urea feeding was also studied. The economics of feeding in relation to growth is also worked out. Post prandial changes in the major rumen and blood constituents were estimated and two digestibility and balance trials were conducted on all the male calves. Rumen samples were drawn from

a calf in each treatment for the *in vitro* studies to note how the SRL affects the digestibility of dry matter and cellulose and the production of total volatile fatty acid with certain combinations of feeds and fodders.

It is evident from the present study that higher level of DP feeding results in beneficial effects, though the body weight gains were not significant. Their better efficiency is also reflected in rumen and blood constituents particularly, higher total-N, feed and protozoal-N and the Protein-N approaching the level of significance. The higher ruminal ammonia-N consequently resulted in higher serum urea-N with this treatment. Hence, if a substantial part of the feed protein as of lower solubility, higher level of DP feeding probably will result in significantly better performance by virtue of its lower ruminal ammonia-N consequently and lower serum urea-N concentration. The beneficial effects of higher DP feeding are also reflected in the data from the digestibility and balance of nutrients and better digestibility of dry matter and TVFA production as observed during the *in vitro* studies.

The incorporation of urea in the ration resulted in lower body weight gains and its ill-effect was most marked only in male calves. The inferior performance by these calves is also reflected in the rumen and blood constituents and hence consequently in lower gain in weight and higher cost for per kg gain in weight.

Considering all the results, it is felt that with almost similar cost for per kg gain in weight, it is advantageous to feed higher level of DP and to avoid use of urea for growing calves particularly the male Kankrej calves.