EFFECT OF NICOTINIC ACID SUPPLEMENTATION ON PRODUCTION PERFORMANCE OF LACTATING COWS

Nicotinic acid in its co-enzyme forms, NAD and NADP are involved in many metabolic reactions especially important for those reactions that provide energy to the animal. There are reports showing that nicotinic acid supplementation can improve milk production and reduce occurrence of ketosis in cattle (Fronk and Schultz, 1979). Hence this study was undertaken to assess the effect of supplementation of nicotinic acid in the diet of lactating cows on milk production and milk fat percentage.

Twelve cross-bred lactating cows were selected from University Livestock Farm Mannuthy and were divided into two groups as uniformly as possible with regard to parity and days in milk. They were allotted randomly to two dietary treatments T1 and T2. All animals were fed commercial concentrate mixture used in the farm and green fodder to meet their nutritive requirements. Animals of the group T2 were fed with 10g nicotinic acid per animal per day. Records of daily milk yield were maintained through out the experimental period of one month. Milk samples were collected in the beginning and towards the end of the experiments and were analysed for fat content, using Gerber's method (IS:1224, 1977). Data on average milk production and fat percentage were analysed using analysis of covariance and students't' test (Snedecor and Cochran, 1994) respectively. The animals of the groups T1 and T2 consumed on an average 5.58 and 5.42 kg of concentrates respectively. The green fodder was fed *ad libitum.*

Weekly average of daily milk production for control and experimental groups are given in the table. Average initial yield was 9.47 and 9.55 kg for T1and T2 respectively, and the final milk yield was 8.84 and 9.96 kg respectively. There was no significant difference between the two groups. Average milk yield of the animals which received nicotinic acid showed a numerical increase in milk production while there was a gradual decline in milk yield in those fed with the control diet. The final yield was 0.63 kg lower for the control, while it was 0.41kg higher in T2 when compared to that of the initial yield.

Initial fat percentage was 3.2 for control and 3.38 percent for the treatment group. The final values were 3.31 and 3.85 percent respectively for groups T1 and T2. Fat percentage also showed a numerical increase in both groups but the increase was higher for T2. However statistical analysis did not reveal any significant difference between two groups. The milk yield was 7.94 and 9.68 kg respectively for the control and experimental group, with fat content corrected to four percent.

Results of the present study are in agreement with that of Riddell *et al.* (1981) who observed only numerical increase in milk production when early lactating cows were supplemented with nicotinic acid. Dufva *et al*. (1982) also could not observe any significant effect on milk yield or milk composition when supplemented with nicotinic acid. Similarly Costanzo *et al*. (1997) reported no significant increase in milk production but observed decreased skin temperature during mild or severe heat stress.

Fronk and Schultz (1979) on the other hand observed a significant increase in milk production in dairy cows suffering from ketosis when supplemented with nicotinic acid. Similarly increased milk production was also reported by Jaster and Ward (1990) when nicotinic acid was supplemented to lactating cows.

From overall assessment of the results obtained it could be concluded that nicotinic acid supplementation in the ration of lactating cows did not significantly improve the milk yield or milk fat percentage. But there was a numerical increase in average daily milk yield, fat percentage and 4 per cent fat corrected milk yield in cows supplemented with nicotinic acid.

Table. Weekly average of daily milk production (kg) of experimental cows

	Weeks				
Treatment	Initial	1	2	3	4
T1	9.47 ±0.74	9.46 ± 0.79	9.04 ± 0.78	8.75 ± 0.87	8.84 ± 0.69
T2	9.55 ± 0.6	10.35 ± 1.02	10.70 ± 1.28	10.41 ± 1.29	9.96 ± 1.35
P value	NS	NS	NS	NS	NS

Summary

The effect of dietary supplementation of nicotinic acid on milk yield and milk fat percentage was studied in twelve lactating cows allotted at random to treatments T1 and T2. All animals were fed concentrate mixture and green grass to meet their nutritive requirements. Animals of T2 were given 10g of nicotinic acid / head / day. Result of the study showed an increase in milk yield and milk fat percentage, though not statistically significant, in nicotinic acid supplemented group.

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