Effect of two dietary regimes on milk production parameters and excretion of urinary purine derivatives (PD) of cross-bred milking cows.

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Ruminants meet 50 to 100% of their total crude protein requirements from ruminal microbial synthesis. Microbial protein is assimilated principally as amino acids and nucleic acids both of which undergo a series of metabolic processes. The catabolism of purine bases usually yields purine derivatives (PD), which are principally allantoin, uric acid, xanthine and hypoxathine. The objective of the present study was to estimate milk yield, quality and urinary purine derivatives (PD) of cross-bred milking cows fed at two different dietary regimes. Ten cross bred (Jersy x shorthorn; Jersey x Frisian and Sindhi x Sahiwal) milking cows (Live weight 205-260 kg; stage of lactation 109-129 days and number of lactation 2-4) fed "on farm diet" [crude protein (CP)-12.5%]. After 20 days an "experimental diet" (CP -14.5%) was fed for another 20 days. Total milk yield was estimated and samples of milk and feeds were collected during last three days of each period while spot urine samples were collected for two consecutive days between 08-12 hrs, 12-15 h, 16-20 hrs and 20 to 08 next morning within 24 hours. Milk samples were analyzed for fat and total solids while proximate composition of feeds were also determined. Urine samples were analyzed for allantoin, uric acid and creatinine.

Results reveal that cross-bred milking cows had higher PD excretion rate when fed with an experimental ration (ER) as compared with the farm ration (FR). The endogenous mean PD excretion rates were 3.45 and 5.21 mmol/day for FR and ER respectively. Allantoin from total PD accounted more than 80%. PD: Creatinine (PDC) index ranged from 52.61 to 56.7 for ER and FR, affected ($P<0.05$) by the dietary regime but not by the time of sampling. Average milk yield 4.03 kg/head/day) increased ($P<0.01$) by feeding of ER as compared with FR (3.64 /kg/head/day). Average fat content in milk also showed the same trend (5.07 & 3.91 with ER and FR respectively). The estimated PDC indices confirmed that efficient microbial production associated with better feeding could be a reason for improved milk yield and quality.

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