Effect of Supplementation of Gliricidia (*Gliricidia sepium*) Leaves in Guinea Grass (*Megathrsus maximus*)-based Diets for Dairy Cattle: Diet Composition, Milk Yield, and Milk Composition

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The current research was conducted to investigate the effect of supplementing gliricidia on diet composition, feed intake, milk yield, and milk composition of lactating dairy cows. Nine crossbreed (Jersey × Sahiwal) lactating dairy cows at their mid-lactation were assigned into three groups in a completely randomized design. The three groups were fed separately with guinea grass-based diets supplementing varying levels of gliricidia (10, 15, and 30%; 22.7% dry matter). The animals were fed *ad libitum* and feeding was done twice daily over 26 days. The daily milk yield of each animal, feed intake, and the compositions of major milk constituents were measured daily. Animals were carefully monitored for any abnormal signs of behaviour during the experimentation period. The proximate compositions and energy contents (gross energy, MJ/kg) of gliricidia, Guinea grass, and the three experimental diets were also determined. Guinea grass contained approximately 6% crude protein, 1.6% crude fat, 37% crude fibre, and 15.2 MJ/kg energy. The supplementation of gliricidia significantly increased the crude protein (~10, 13, and 15% for 10, 15, and 30% supplementation levels, respectively), crude fat (~1.8, 2.1, and 2.5% for 10, 15, and 30% supplementation levels, respectively), and energy contents (~15.6, 16.0, and 16.2 MJ/kg for 10, 15, and 30 inclusion levels, respectively) of the basal diet while proportionately decreasing the crude fibre contents (34.4, 32.9, and 24.5% for 10, 15, and 30 supplementation levels, respectively). The average daily milk yield of the cows increased proportionately to the level of gliricidia supplemented in the basal diet. The mean increased milk production was 0.7 ± 0.11, 0.96 ± 0.41, and 2.23 ± 0.08 L/day for 10, 15, and 30% supplementation levels, respectively. Supplementation of gliricidia increased fat, solid non-fat (SNF), protein, and total solid contents in milk ($P>0.05$). Feed intake (44-50 kg/day) of the animals remained the same before and during the experimentation period suggesting no effect on feed intake. Results conclude that 30% inclusion of gliricidia significantly increases the nutritive value of the guinea grass basal diet and milk yield of lactating dairy cattle without any negative effects on feed intake.

Keywords: Crude protein, Dairy cattle diet, Lactation diets, legumes, Gliricidia supplementation