TH247 Influence of concentrate and protein levels on milk production by Holstein cows. R. P. Lana*[1,2], G. F. Sobreira[1], M. I. Leão[1], J. A. Freitas[3], D. C. Abreu[1], W. C. Lopes[1], and G. Guimarães[1], [1]*Universidade Federal de Viçosa*, *Viçosa, MG, Brazil*, [2]*CNPq*, *Brasília, DF, Brazil*, [3]*Universidade Federal do Paraná*, *Palotina, PR, Brazil*.

According to the Biotechnology and Biological Sciences Research Council (1998), formerly AFRC, all existing feeding systems are designed to balance nutrients to meet the animals' requirements, but the authors recognize that in practice, the farmer has no obligation to do that if it is contrary to the economic profitability. An experiment was developed to evaluate the effect of four levels of concentrate - CON (30, 40, 50 and 60%) and four of crude protein - CP (12, 14, 16 and 18%) in the total dry matter (DM) on milk production and composition in confined Holstein cows. Forty-eight animals (640 kg LW) were allotted in two 4 x 4 Latin squares (six cows/pen), in four periods of 28 days, divided in four sub periods of seven days. The CON was distributed in the plots and the CP in the subplots. The forage was corn silage and the CON constituted of corn meal, soybean meal, urea, and mineral supplements. There were no effects (P>0.05) of CP and CP*CON on animal body weight, feed intake (forage, CON, and total DM), milk production and composition, showing that 12% CP was as effective as 18% in the cows performance. The 30% CON diet presented DMI, CON intake and milk production of 17.5, 5.3 and 19.1 kg, respectively. The CON level increased (P<0.01) DM and CON intake, and decreased (P<0.01) forage intake by 0.188 kg, 0.288 kg, and 0.093 kg, and increased (P<0.05) milk production by 0.151 kg per unit (%) of CON level, with no effect on milk composition (P>0.05). Although milk production increased, the marginal response reduced (P<0.05) with increasing CON (0.88, 0.43, and 0.58 kg of milk/kg of CON DM, for the levels of 40, 50 and 60% versus 30% CON). Relation lesser than 1 kg of milk/kg of CON can compromise the profitability, and then diet formulation should consider the cost-benefit ratio and not the balance of nutrients to meet the nutritional requirements of the animals, especially after breeding.

Key Words: Concentrate, Milk, Protein

TH248 Blood and ruminal metabolites of early lactating Iranian Holstein cows fed raw or roasted whole soybean. M. H. Fathi Nasri*[1], M. Danesh Mesgaran[2], R. Valizadeh[2], and H. Farhangfar[1], [1]*The University of Birjand*, *Birjand, Iran*, [2]*Ferdowsi University of Mashad*, *Mashad, Iran*.

This study evaluated responses of early lactation Iranian Holstein cows to feeding roasted whole soybean (SB) or raw SB in diets with lucerne hay and corn silage as the primary forage source. Treatments consisted of a total mixed ration that included 387 g/kg forage supplemented with 1) 120 g/kg of roasted SB and 82 g/kg of cottonseed meal (CSM), 2) 120 g/kg of raw SB and 82 g/kg of CSM or 3) 120 g/kg of soybean meal (SBM) and 82 g/kg of cottonseed (CS), on a dry matter (DM) basis. The diets which were formulated to be iso-nitrogenous and iso-caloric were offered to fourteen multiparous Holstein cows (body weight = 617.0 kg, days in milk = 16.9) that were assigned randomly to one of three experimental diets for a 45-d trial. Roasted SB were obtained by roasting seeds for 1.5 to 2 min in a commercial roaster (exit temperature of seeds was about 140-145°C) and immediately placing, without cooling, in covered wooden barrels for 45 min. A dietary effect on rumen pH values, glucose and beta-hydroxy butyrate (BHB) concentrations were not detected among cows fed different diets (Table 1). Rumen ammonia N concentration were significantly lower for the cows fed roasted SB compared with those fed raw SB. The lower ruminal ammonia concentration in cows fed roasted SB diet compared with raw SB diet, possibly arose as a consequence of lower ruminal protein degradability of roasted SB. Plasma urea nitrogen (PUN) concentrations were also significantly (p<0.031) lower in cows fed roasted SB than in cows fed raw SB that confirms the reducing of ruminal protein degradability of roasted SB.

Table 1.

Item	SBM plus CS	Raw SB plus CSM	Roasted SB plus CSM	SEM	Contrast[1]	
pH	6.22	6.18	6.20	0.08	NS[2]	NS
Ammonia N	13.7	14.3	12.8	0.30	0.024	NS
Glucose	57.3	59.0	59.3	2.86	NS	NS
Beta-hydroxy-butyrate	8.97	9.95	9.16	1.88	NS	NS
Plasma urea N	18.3	18.8	16.5	0.68	0.031	NS

[1] Contrast includes 1) roasted SB vs. raw SB and 2) SB plus CSM vs. SBM plus CS. [2] P > 0.05.

Key Words: Whole Soybean, Early Lactation, Iranian Holstein Cow

TH249 Endogenous nitrogen (EN) flows: Effects of metabolizable protein (MP) supply in lactating dairy cows. D. Valkeners[1], H. Lapierre[1], U. Schönhusen[2], P. Junghans[2], C. C. Metges[2], and D. R. Ouellet*[1], [1]*Agriculture and Agri-Food Canada*, *Sherbrooke, QC, Canada*, [2]*Research Unit Nutritional Physiology*, *Dummerstorf, Germany*.

The current NRC model (2001) estimates EN at the duodenum as 1.9 g per d per kg DMI, with no allowance for differences in diet quality. The current study used 4 lactating cows in a replicated incomplete 3×3 Latin square to study the effect of MP supply on EN flows. Cows were fed every 2h a TMR. Three concentrates were formulated to provide NE_L according to requirements (126 MJ/d) and to supply incremental amounts of MP:1430 (Low), 1920 (Medium) and 2160 (High) g MP/d, which corresponded to 72, 98 and 111% of estimated MP requirements. From d 27 to 35, cows were infused into a jugular vein with L-[^{15}N] leucine (0.45 mmol/h). On d 34 and 35, rumen and intestinal mucosa, duodenal digesta and feces were sampled (4 samples/d) to determine EN flows (see Table), as previously described (Ouellet et al., 2002; JDS 85:3013). The N flows across the gut are presented in the Table. Total duodenal N flow increased from Low to High MP as did the flow of undigested feed. The duodenal flow of free EN and of total EN increased linearly with increased MP supply, although, contribution of EN to bacteria protein was unaffected by treatments. The EN loss in feces did not vary with treatments and represented 2.1 g/kg of DMI. Overall, total EN varied (P = 0.03; linear) with increasing MP supply (4.2, 4.7 and 4.8 ± 0.2 g/kg of DMI), representing 16% of duodenal N flow. Contribution of EN to bacteria flow is about equal to free EN and needs to be included in EN duodenal flows. Fecal EN flow provides a direct estimation of metabolic fecal loss.