EFFECT OF PROTEIN SOURCE ON FEEDLOT PERFORMANCE OF EARLY WEANED BEEF CALVES

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OBJETIVE

To evaluate the effect of protein source on feedlot performance of spring born early weaned beef calves.

MATERIALS AND METHODS

Location and experimental period.
Uruguay (32° S, 58° W), during end summer-fall 2011.

Animals.
27 early weaned Hereford calves (93.7±15.5 kg; 110±18.2 days old) randomly allocated to 9 pens outdoors.

Replications: 3 pens/ treatment, 3 calves/pen.
Each pen had a trough (30 cm front access/ calf), a water source and a shade area.

Diet:
A total mixed ration 26% sorghum silage, 74% concentrate.
ME: 2.70 Mcal/kg, CP: 16%
· Feed was offered at 2.5% of liveweight, in 3 meals, during 75 days.

TREATMENTS

Calves received one of 3 rations differing in the supplementary protein source, representing increasing levels of rumen undegradable protein (RUP, Table 1).

Table 1. COMPOSITION OF THE CONCENTRATE INCLUDED IN THE EXPERIMENTAL DIETS

PROTEIN SOURCE	Treatments UREA	SOYBEAN MEAL	FISH MEAL
Ingredient (% DM)			
Urea	1.7	-	-
Urea slow release*	1.7	-	-
Soybean meal	-	31.2	-
Fish meal	-	-	25.2
Sorghum grain ground	22.4	30.4	31.8
Maize grain ground	38.1	33.5	38.2
Wheat bran	31.2	-	-
Premix**	3.3	3.3	3.3
Chemical composition			
Dry Matter (DM. % as fed)	89.6	88.6	88.6
Metabolizable energy (Mcal/kg)	2.94	3.06	3.06
Crude protein (% DM)	19.2	19.0	19.0
RUP (%CP)***	20.8	40.9	58.1

Measurments.
· Liveweight (LW) every 7 days, after 12 hours fasting.

· Dry matter intake was determined daily and feed: gain ratio (F:G) calculated based on mean adjusted values.

· Subcutaneous backfat (SBF) and Longisimus dorsi area (LDA) by ultrasonography on day 75.

Statistical analysis
· Records of LW were analyzed as repeated measures using the Mixed Procedure of SAS, while F:G, SBF and LDA were analyzed with GLM procedure.

General model : $y_{ij} = \mu + T_i + b1(\text{Initial LW}) + e_{ij}$

RESULTS

Animal LW increased linearly with time (P<0.01)

TABLE 2. Effect of protein source on feedlot performance of early weaned beef calves

TREATMENTS: PROTEIN SOURCE	UREA	SOYBEAN MEAL	FISH MEAL	SE	P-VALUE
Initial Liveweight, kg	218.8	259.9	10.7		0.001
Livweight gain, kg/ day	0.859b	0.990a	0.995a	0.032	0.008
Feed: gain ratio	3.67a	3.18b	3.09b	0.23	0.070
L. dorsi area on day 75, cm²	30.4	29.7	28.1	3.5	0.994
Subcutaneous backfat on day 75, mm	3.7	3.2	3.6	0.7	0.796

CONCLUSION

Results suggest that under restricted feed intake (2.5% LW) early weaned beef calves could benefit from receiving part of the supplemental CP in the ration as RUP. It is probable that this would allow for higher metabolizable protein intake and N utilization.

*Optigen II®
** Includes mineral and vitamin complex, monensin and yeast.
*** RUP: rumen undegradable protein, calculated base on feed reported values (NRC. 1996)