Carcass traits of Nellore young bulls fed corn silage inoculated with *Lactobacillus buchneri* 40788 associated at two concentrate levels

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Introduction According to Millen et al. (2009), corn silage is among the main sources of fiber used in finishing of beef cattle in feedlot in Brazil, justifying the *Lactobacillus buchneri* application because the aerobic deterioration. However, there are few studies that evaluate the lactic acid bacteria application on carcass traits of young bulls. Lower roughage: concentrate ratios is important to reduce slaughter time of animals, because the use diets with more concentrate increase the average daily gain and modified protein and fat deposition in carcass (Missio et al., 2010). The aim of this trial was to evaluate *L. buchneri* inoculation in corn silage and their effect on the carcass traits of Nellore young bulls fed in feedlot with two concentrate levels in the diet.

Material and Methods A corn hybrid 2B688Hx (Dow AgroSciences) was harvested at 312 g/kg DM. Forages were chopped to achieve a theoretical length of 10 mm and ensiled without inoculant (control) or with $1x10^5$ cfu of *Lactobacillus buchneri* NCIMB 40788 per gram of fresh forage. Inoculant was dissolved in water (0.7 L/t) and then applied with spray above on the fresh forage under constant mixing. Similar amount of water was applied in control silage. Bunker silos (60 t of corn forage each) remained closed for 70 d. Twenty eight Nellore young bulls with average initial body weight (BWi) of 322.7±10.2 kg were kept in feedlot. Initially, cattle were weighed, identified and housed in individual pen ($8 m^2$) with feeders and automatic drinkers. Cattle were submitted to 18 days of adaptation to experimental installations and diets. The treatments were two silages (uninoculated and inoculated with *L. buchneri*) associated with two concentrate levels (60:40 and 40:60). All diets were balanced according nutrient requirement of beef cattle for daily gain of 1.3 kg (NRC, 2000). Animals were fed *ad libitum* (orts of 10%) once daily (7:00 am). Daily weights and samplings were performed for the diet quantities provided and orts from each animal. After 116 days of feedlot after adaptation, animals were slaughtered when they reached 503 kg of body weight. The beginning of the trial all the animals were weighed after a 16 h solid fast before the first feeding in the morning. Average daily gain (ADG) was obtained by weighing the animal at the beginning and the end of the experiment, always after a 16 h solid fast. The feed efficiency (G:F) was determined dividing ADG (g/d) by DM intake (g/d). The animals were slaughtered with an average shrunk BW of 503.0 ± 23.9 kg and all carcasses were chilled at 0°C for approximately 24 h. After slaughter, the hot carcass weight (HCW), dressing percentage (DP) in relation the HCW and pelvic, kidney and heart fat (KPH, %) in relation the HCW were recorded. *Longissimus muscle* area (LMA) and cover rib fat thickness (RFT) was estimated as from the left side of the carcass by exposing the *L. muscle* at the region between the 12th and 13th rib. *L. muscle* areas were traced on transparencies and measured later with a planimeter and RFT measurements were taken ¾ the length ventrally over the *L. muscle* by using a digital paquimeter (Greiner et al., 2003). The pH values of the carcass were taken after 24 hours of chilling (final pH), using pH meter with electrode penetration, measured at approximately 4 cm deep, made the *L. muscle* in left carcass. Data were analyzed by ANOVA using MIXED procedure of SAS as a completely randomized design in a 2 x 2 factorial arrangement (with seven replicates). Effect of treatment was considered fixed and

animal considered random effect. Differences between the means were determined using DIFF. Significant differences were declared at P < 0.05 and tendencies at $P \geq 0.05 < 0.10$.

Results and Discussion The ADG was improved when the young bulls consumed inoculated silage associated with a greater amount of concentrate in the diet (S x F:C ratio interaction). The association of inoculated silage with 40% of concentrate resulted in lower LM area in the young bulls fed with this diet (Table 1). No observed effect of inoculant on the DP, KPH, RFT and pH values (Table 1). However, all treatments have allowed the animals end up with more than 3 mm of RFT, which is required by the packing plants. The results of this study support the findings of Fugita et al. (2012), in which the authors evaluated the use of a commercial product containing strains of lactic acid bacteria on carcass traits of crossbreed steers (Nellore x Angus), and did not observe any effect of the inoculant on the variables studied.

Table 1 Effect of *Lactobacillus buchneri* inoculation in corn silage associated with concentrate levels on performance and carcass traits of Nellore young bulls.

Item	Control		*L. buchneri*		SEM	P-value*		
	60:40	40:60	60:40	40:60		S	R:C	S × R:C
BWi, kg	347	339	343	349	3.702	0.436	0.863	0.073
BWf, kg	511	506	498	520	7.426	0.939	0.259	0.096
ADG, kg/dia	1.46	1.44	1.36	1.58	0.051	0.737	0.065	0.029
G:F	0.17	0.17	0.17	0.16	0.003	0.742	0.124	0.329
DP, %	54.96	55.66	54.80	55.34	0.369	0.645	0.231	0.881
KPH, %	1.66	1.79	2.01	2.13	0.164	0.147	0.595	0.987
RFT, mm	5.65	4.34	5.84	3.57	0.623	0.746	0.530	0.590
pH	6.08	6.14	6.01	6.18	0.096	0.881	0.373	0.679
LMA, cm^2	68.53	64.54	63.24	69.94	1.827	0.976	0.463	0.007

*S = silage (inoculated vs. control); R:C = roughage: concentrate ratio (60:40 vs. 40:60); S x R:C = silage x R:C ratio interaction.

Conclusions Nellore young bulls fed corn silage inoculated with *Lactobacillus buchneri* associated at high concentrate level presents higher ADG. However, only LMA was higher in these animals, with no effect on the others traits.

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