

MEAT QUALITY OF NELORE YOUNG BULLS WITH DIVERGENT EXPECTED PROGENY DIFFERENCE FOR POST-WEANING GROWTH

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Abstract – The aim of this study was to evaluate the longissimus muscle area (LMA), fat thickness (FAT), and meat quality traits of Nelore bulls with different expected progeny difference for post-weaning growth (EPDg). Forty-three Nelore bulls (20 months old, 410 ± 40 kg of mean body weight), were distributed in a completely randomized design and divided into two groups according EPD, high and low. After 120 days on feed, the animals were slaughtered, and 24 h after slaughter carcasses were ribbed at 12th rib level for LMA and fat thickness measurements. In addition, a Longissimus sample was taken for color, cooking loss and Warner-Bratzler shear force analysis. The EPD group did not alter LMA, BFT and meat quality attributes. Therefore, it can be concluded that selection for different growth rates does not affect carcass traits and meat quality of feedlot finished Nelore young bulls.

Key Words – genetic selection, LMA, tenderness.

I. INTRODUCTION

The need for improvement of animal production and profitability has generated great search for technologies that provide better results for producers and industry. In this sense, the use of genetic merit for growth rate has been largely used. Some authors related that the use of EPD for growth can improve the average daily gain and slaughter weight [1, 2]. However, because the different patterns of growth between animals, it can lead to changes on meat quality attributes, because it depends of muscle mass deposition and degradation. Moreover, there is a lack of study reporting the effect of selection for growth in meat quality traits. Therefore, the aim of this study was to evaluate the longissimus muscle area (LMA), fat thickness (FAT), and meat quality traits of Nelore bulls with different EPD for post-weaning growth (EPDg).

II. MATERIALS AND METHODS

Nelore bulls (20 months old, 410 ± 40 kg of live weight) were selected based on their information of EPD for post-weaning growth (from 7 to 16 months old). Twenty one animals of high (mean of 9.6 kg) and twenty two of low (mean of 1.2 kg) EPDg were feedlot fed for 120 days and then slaughtered. Twenty four hours after slaughter carcasses were ribbed between 12th and 13th ribs for LMA, FAT and pH measurements. In addition, Longissimus samples were collected, vacuum packed and aged for 0, 7 and 14 days to measure color, cooking loss (CL), and Warner-Bratzler shear force (WBSF) according methodology described by AMSA [3]. The meat color was evaluated using a portable spectrophotometer, model CM2500d (Konica Minolta Sensing Inc., São Paulo, Brazil), considering a D65 light source, angle of observation of 10° and 30 mm opening of measuring cell. Measurements were performed at three different points of the sample and the average was considered as the color (L^* , a^* , b^*) values. Data was analyzed as a completely randomized design, using the MIXED procedure. The model included the fixed effect of EPD for growth, ageing period and its interaction. Significance was declared at $P \leq 0.05$.

III. RESULTS AND DISCUSSION

The EPDg group did not affect the muscle mass deposition (LMA) and fat thickness (FAT) (Table 1). This results can be explained by similar performance (1.51 vs 1.48 kg/day for high and low EPDg respectively) observed during the feedlot. The high EPDg group presented lower L^* values compared to low ($P = 0.058$); however, there were no differences in color parameters, CL and WBSF between EPDg groups. On the other hand, there was an aging time effect for L^* , a^* and WBSF ($P < 0.01$).

Table 1 Effect of EPD for growth on muscle mass and adipose tissue deposition, measured by ultrasound.

Trait	EPD		SEM	P-value
	High	Low		
EPD ¹	9.60	1.22	0.694	<0.001
Loin eye area, cm ²	80.41	80.91	2.095	0.867
Subcutaneous fat thickness, mm	5.18	5.68	3.097	0.366

Table 2 Effect of EPD for growth on color attributes and meat quality.

Trait	EPD		Aging time			SEM	P-value	
	High	Low	0 d	7 d	14 d		EPD	Aging
<i>Color</i>								
L*	33.49	34.75	31.36	34.62	36.37	0.445	0.058	<0.001
a*	15.79	15.55	14.43	16.40	16.17	0.314	0.585	<0.001
b*	16.91	14.65	13.97	18.65	14.72	2.129	0.334	0.240
Tenderness, N	43.37	43.24	60.62	38.40	33.90	1.598	0.239	<0.001
Cooking loss, %	23.42	22.80	21.96	23.42	23.94	0.754	0.459	0.146

IV. CONCLUSION

Selection for growth by EPD did not alter muscle mass and deposition of adipose tissue and did not affect meat quality attributes. The aging time improved the color and tenderness of the meat.

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