

BOVINE MEAT QUALITY OF THREE DIFFERENT GENETIC GROUPS

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INTRODUCTION - The Crioulo Lageano is a breed that originates from the Iberian cattle and has been raised in Brasil for about 400 years suffering only natural selection mainly in the high plains of the State of Santa Catarina (Southern portion of Brasil). The Nelore (*Bos indicus*) is the Zebu breed that is under very good program of selection for meat production and right now is the most popular Zebu breed for this purpose. Charolais is the European breed most raised as straight or in crossbreeding with zebu and British breeds. The objective of this work was to compare carcass and meat quality of an unimproved breed with two others that had been selected for meat production.

MATERIALS AND METHODS - A total of 111 castrated steers were used: Crioulo (483), Charolais (26) and Nelore (37) that were raised, finished in native pasture and slaughtered with about 3 years of age. After 24 hs chill, the right side was used for objective measurements. The side was ribbed between the 12th and 13th rib for evaluation of the *Longissimus* muscle area and fat thickness.

A portion of the loin (9-10-11 rib cut, was used for estimating the physical composition of the carcasses following the procedure of HANKINS and HOWE (1946). The left side was divided into the 3 major cuts as is used in Brasil: pistol cut (round, rump and loin with 8 ribs) forequarter (5 ribs) and side. A portion of the loin was transported to the Meat Laboratory at the University and stored in a freezer at -20°C until used for tenderness determination using the Warner-Bratzler shear device.

RESULTS AND DISCUSSION

Table 1, presents some carcass characteristics of the animals

The Crioulo cattle showed similar live weight with Charolais, being superior to Nelore. There was no significant difference in carcass weight because Nelore presented better dressing percentage. This normally happens when comparing *Bos taurus* with *Bos indicus*, because the latter has lighter head, hide, feet and gut, MULLER et al. (1982). Table 2, presents the proportion of the three major cuts.

Table 1. CARCASS CHARACTERISTICS OF BOVINE OF THREE DIFFERENT GENETIC GROUPS.

		Crioulo = 48		Charolais = 48		Nelore = 37	
		Mean	SD	Mean	SD	Mean	SD
Live Weight	Kg	448.0a	42.2	452.5a	35.3	422.0b	32.5
Hot Carcass weight	kg	224.0	18.5	238.0	16.4	227.0	14.2
Dressing Percentage	%	50.0c	1.6	52.6b	1.2	53.9a	1.2
Fat Thickness	mm	1.39b	0.5	1.2b	0.3	2.27a	0.4
Longissimus area	cm ²	65.11b	5.2	70.0a	4.8	64.11 b	5.6

TABLE 2. PROPORTION OF THE MAJOR CUTS OF BOVINE OF THREE DIFFERENT GENETIC GROUPS

	Crioulo = 48		Charolais = 48		Nelore = 37	
	Mean	SD	Mean	SD	Mean	SD
Pistol cut a	48.8b	1.2	49.5a	1.6	49.7a	1.4
Forequarter	37.0b	1.3	35.4a	1.1	37.7b	1.6
Side	14.2a	0.8	15.1a	0.6	12.6b	0.3

a Includes de round, rump and loin with 8 ribs

There was not a great deal of difference in the major cuts although the Crioulo presented a little lower proportion in the pistol cut. Zebu cattle normally presents lighter side than *Bos taurus* what is confirmed by this work. Physical composition of the carcass is presented in table 3.

TABLE 3. PHYSICAL COMPOSITION OF BOVINE OF THREE DIFFERENT GENETIC GROUPS

		Crioulo = 48		Charolais =268		Nelore = 37	
		Mean	SD	Mean	SD	Mean	SD
Muscle	%	68.6b	2.5	70.5a	2.7	67.8b	3.2
Fat	%	12.0b	1.2	11..5b	0.6	13.4a	1.0
Bone	%	19.4a	1.0	18.0	0.8	18.8b	0.6

Charolais displayed better muscle development being the difference non significant between Crioulo and Nelore. The proportion of bone was higher in the Crioulo but within normal values for steers of this age and finish

Tenderness determination through the Warner-Elratzler shear7 gave the following values: Crioulo (8.12), Charolais (97.25) end Nelore (10.42). Nelore was significantly tougher than the other two groups. The results are in agreement with the values reported by CARPENI ER et al. ~ 1964), MULLER et al. (1982). Wheeler et al. (1990), Whipple et al.(1990) and SHACKELFORD et al. (1991) who found that Bos indicus produce less tender meat than Bos Taurus.

CONCLUSION - The results of this work show that the Crioulo, althowgh not selected for meat production, produces carcass of good quality and deserved further studies andpreservation of this important genetic material.

REFERENCES

1. Carpenter, J. W., A. Z. Palmer, W. G. Kirk, F. M. Peacock and M. Koger. 1964. Slaughter and carcass characteristics of Brahman and Brahman - Shorthorn steers. University of Florida, Gainesville, FL, USA. Tech. Bull. 680.
2. Hankins, O. G. and Howe, P.E. (1946). Estimation of the composition of beef carcasses and cuts. Tech. Bull, 926, 20 p.
3. Muller, L., L.F.B. gorges, and L.A. Pfau. (1982). Carcass and meat quality of Charolais and Zebu steers. 28th European Meeting of Meat Res.Workers, Madrid, Spain, Proc. n, 397-399.
4. Shackelford, S.D., M.Koomaraie, M.F. Miller, J. D. Crouse and J.O.Reagan. An evaluation of tenderness of the Longissimus muscle of Angus by Hereford versus Brahman crossbred heifers. J. Anim. Sci. 69: 171.
5. Wheeler, T.L., J.W. Savell, H. R. Cross, D.K. Lunt and S.B. Smith (1990). Mechanisms associated with the variation in tenderness of meat from Brahrnan and Hereford cattle J. Anim. Sci. 68:4206.
6. Whipple, G., M. Koomaraie, M.E. Dikeman, J.D. Crouse, M.C. Hunt and R.D. Klemm (1990). Evaluation of attributes that affect longissimus mescle tenderness in Bos Taurus and Bos indicus cattle. J. Anim. Sci. 68.2716.