

P-04-22**Texture evaluation through texture profile analysis of cachena meat, a portuguese cattle breed (#553)**Sara Ricardo-Rodrigues¹, Miguel Elias², Marta Laranjo³, Maria Eduarda Potes⁴, Ana Cristina P. Agulheiro-Santos⁵

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Introduction

Texture is an attribute that determines meat quality evaluation by consumers. The meat tenderness was affected by complex interactions of multiple ante-mortem and post-mortem factors such as animal genetics, feeding, handling, slaughter process. Genetics determines an animal's potential for producing tender meat, and its interaction with ante- and postmortem environment and also management will determine the ultimate tenderness of the meat from each animal.

Cachena's animals are small and the meat is known by its excellent characteristics of texture and flavour. This cattle breed is part of the Portuguese genetic heritage, very interesting for the south Alentejo, a poor agricultural region of Portugal, due to the high rusticity of these animals. The determination of the factors that affect meat tenderness of Cachena is of extreme importance for the producers, and for consumers.

One of the instrumental tests for evaluating the most important meat texture parameters is the Texture Profile Analysis (TPA) that allowsto understand the relation of physical/rheological properties with a dynamic perception of texture by consumers. The TPA mimics the mastication process and is commonly used in meat evaluation.

The main goal of GOCACHENA project is understanding the relation among genetics, feeding, age and weight of animals, with the quality, mainly tenderness, of this exquisite meat. This research work is part of the refereed project and obtained on preliminary results useful for the persecution of the main goals. The goal of this trial is to understand what TPA parameters better describe textural characteristics of Cachena meat from *Long dorsal* muscle, and to look for differences between two different usual meat presentation: sliced and entire muscle.

Methods

The meat was obtained from animals of Cachena breed, all of them were males, with slaughter weight from 165 to 225 kg, and age between 6 and 13 months. The modalities of this trial are different due to the preparation of the meat of *Long dorsal*: sliced (aging 2, 5, 8 days) and entire pieces (aging 2, 8, 10 days). From each animal two parts of the *Long dorsal* muscles were separated and packed in bags each one with two samples and the measures were done in triplicate in each slice of each sample.

The texture was analyzed trough Texture Profile Analysis (TPA) using a Tex-

ture Analyzer TA.HD.Plus (©Stable MycroSystem).

The samples were prepared according to Fabre et al (2018) and Veiseth-Kent et (2018).

The statistical evaluation of the data was based on an Analysis of Variance, considering $p < 0.05$ and a Tukey's HSD test to find significantly different mean values ($p < 0.05$).

Results

The results shown that there aren't significant differences for Tenderness, Springiness and Chewiness for sliced meat, however a slight decrease was noticeable (Table 1). Considering the entire pieces, (Table 2) the only significant difference was found in Springiness values. The values of Tenderness unexpectedly increased slightly.

There was a great heterogeneity of Tenderness, Springiness and Chewiness values between entire pieces and slices, which varies according to the animal (data not shown). It should be noted that the preliminary results obtained do not show that the differences may be related to weight or age of animals. The dramatic heterogeneity in the meat of animals may be caused by genetic factors. This statement confirms the necessity of deep studies of this breed.

Conclusion

Springiness, considering the other parameters obtained through TPA, is the one that exhibited better sensitivity to texture differences. Other methods, such as Shear test should be tried.

The differences found in meat textural characteristics should be deeply studied considering genetic factors, which confirms the necessity of studies like that of the GO-CACHENA project.

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Notes

FIGURES

Table 1 - Values of mean and standard deviation for sliced meat during 8 aging days

Aging	Tenderness (N)	Springiness (mm)	Chewiness (J)
2 days	15,41 ± 5,28	0,64 ± 0,11	6,17 ± 2,48
5 days	16,31 ± 8,90	0,61 ± 0,09	6,16 ± 3,64
8 days	13,91 ± 6,23	0,62 ± 0,11	5,42 ± 2,65

Table 2 - Values of mean and standard deviation for entire pieces during 10 aging days

Aging	Tenderness (N)	Springiness (mm)	Chewiness (J)
2 days	10,38 ± 5,43	0,53 ± 0,09 a	2 3,76 ± 2,31
8 days	9,74 ± 4,13	0,55 ± 0,10 ab	3,51 ± 1,78
10 days	11,00 ± 5,10	0,58 ± 0,12 b	4,09 ± 2,28

Different letters indicate statistically differences between aging days ($p < 0.05$; Tukey HSD).

Table 1 and 2 Values of mean and standard deviation for sliced and entire pieces

Notes