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Knowledge connecting land, food and people

Tenderness analysis and consumer sensory evaluation of fresh meat

S. Ricardo-Rodrigues[1*], A. C. Agulheiro-Santos[1,2], S. Temporão[3], M. Laranjo[1],
M. E. Potes[1,4], M. Elias[1,2]

[1]ICAAM (Instituto de Ciências Agrárias e Ambientais Mediterrânicas), IIFA (Instituto de Investigação e Formação Avançada), Universidade de Évora, Ap. 94, 7002-554 Évora, Portugal.

[2]Departamento de Fitotecnia, Escola de Ciências e Tecnologia, Universidade de Évora, Pólo da Mitra, Ap. 94, 7006-554 Évora, Portugal.

[3]Aluna de licenciatura em Bioquímica pela Universidade de Évora no ano letivo 2018/19.

[4]Departamento de Medicina Veterinária, Escola de Ciências e Tecnologia, Universidade de Évora, Pólo da Mitra, Ap. 94, 7006-554 Évora, Portugal.

*Email: sirr@uevora.pt

INTRODUCTION

During the purchase of the meat there are three attributes, among others, that are usually taken into account: the appearance, the colour and the presumed tenderness of the meat, assumed from the beef cuts that had been chosen. After that, while the meat is eaten the most determining attribute is tenderness.
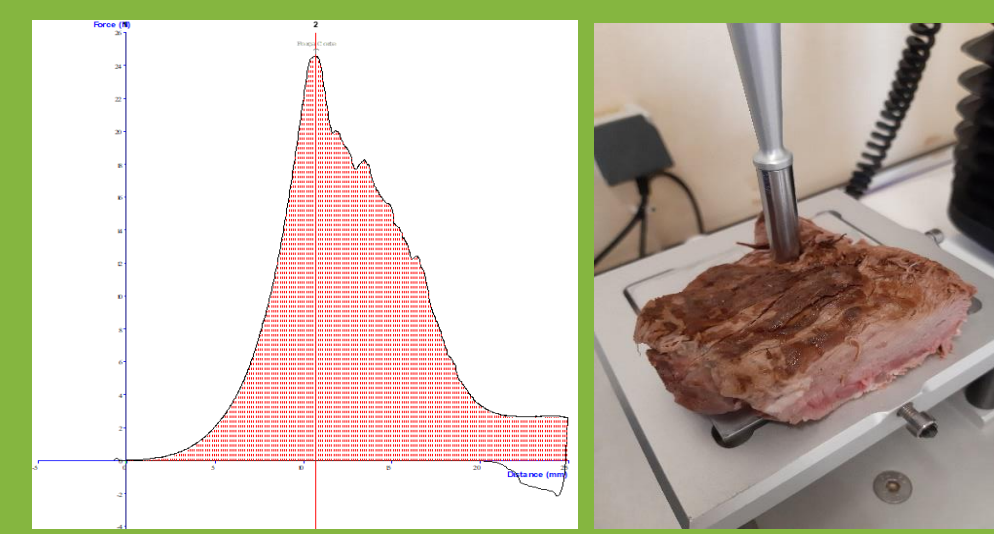
AIM

The present study aims to establish an index for the differentiation between hard and tender beef of commercial origin.
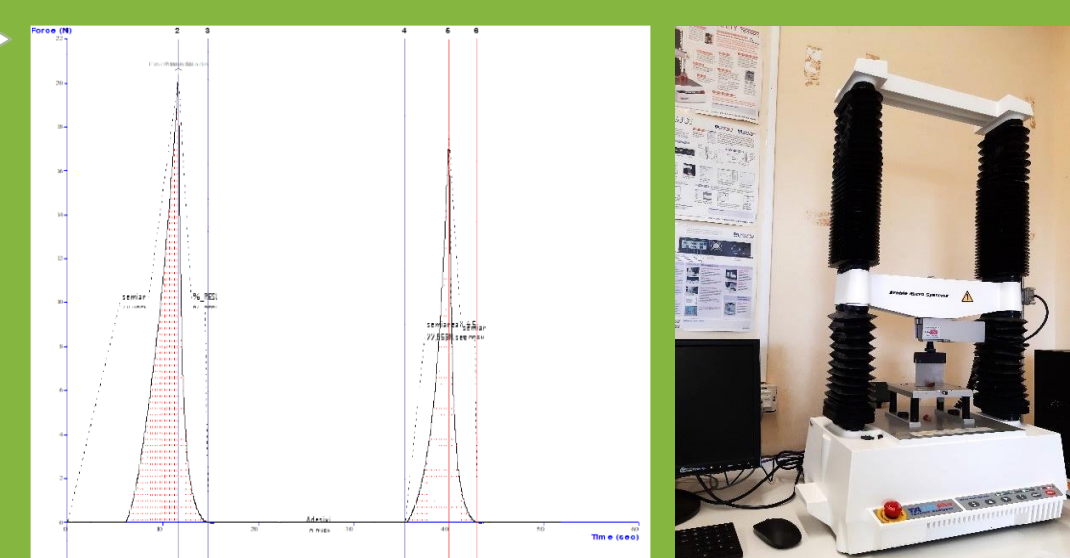
MATERIAL AND METHODS

Beef cuts
"Chã de fora" (a)
"Rabadilha" (b)
"Lombo" (c)
"Vazia" (d)
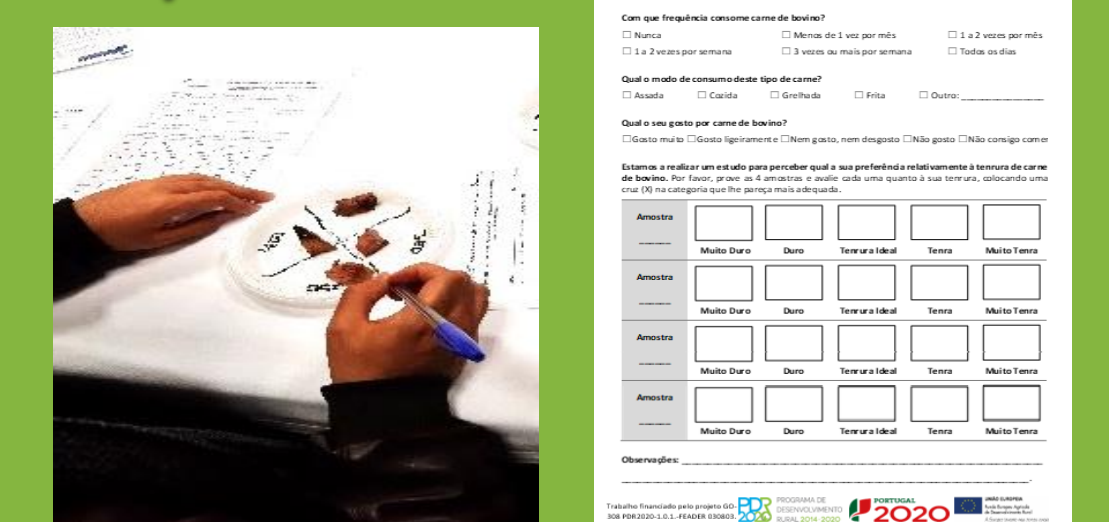
Instrumental tests
Warner-Bratzler shear force

Texture profile analysis TPA

Sensory evaluation
250 consumers using a hedonic scale
5 classes:
Very Hard, Hard, Ideal Tenderness, Tender and Very Tender

And frequency, mode of consumption and beef palatability

RESULTS

	Very Hard	Hard	Ideal Tenderness	Tender	Very Tender
"Rabadilha"	6.28	41.70	30.94	18.83	2.24
"Vazia"	13.90	31.39	32.29	15.70	6.73
"Lombo"	0.00	3.59	36.32	36.32	23.77
"Chã de Fora"	14.35	45.29	20.63	13.45	6.28

The "lombo" is significantly tender than the remainaing beef cuts, considering instrumental evaluation, which is in agreement with the assessment made by consumers.

Beef cuts	Hardness (N)	Shear Force (N)
"Rabadilha"	20.80 ± 5.88	34.97 ± 4.26
"Lombo"	14.29 ± 2.49	27.39 ± 4.84
"Vazia"	26.68 ± 6.57	33.19 ± 9.42
"Chã de Fora"	35.68 ± 20.42	33.77 ± 4.57

The compression force was higher when testing "chã de fora" beef cut, however the results of the shear force for this same beef cut are identical to those of "rabadilha" and "vazia".

The importance of the probe used in texture evaluation and the fibbers direction, should be considered to understand the tenderness of the meat evaluated by consumers.

CONCLUSION

According to these results a tender meat should have shear force values between 15 and 32 N and hardness values between 11 and 20N, while a hard meat should have shear force greater than 37 N and firmness greater than 30N.