

# Establishing tenderness threshold of beef using instrumental and consumer sensory evaluation

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## INTRODUCTION

The consumers consider tenderness one of the most important qualitative characteristic of meat, so they are willing to pay a higher price for beef as long it is guaranteed tender. Establishing a tenderness threshold could serve as a precise quality control system to guarantee tender meat and to assure consumer acceptability. A threshold is defined as a point on the sensory stimulus scale at which a transition occurs in a series of sensations or judgements.

### OBJECTIVES

The present study aims to establish a tenderness threshold for beef steaks using a consumer sensory test, for the differentiation between hard and tender beef.

### MATERIAL AND METHODS

Beef Cuts

Four samples of commercial beef origin



Instrumental tests

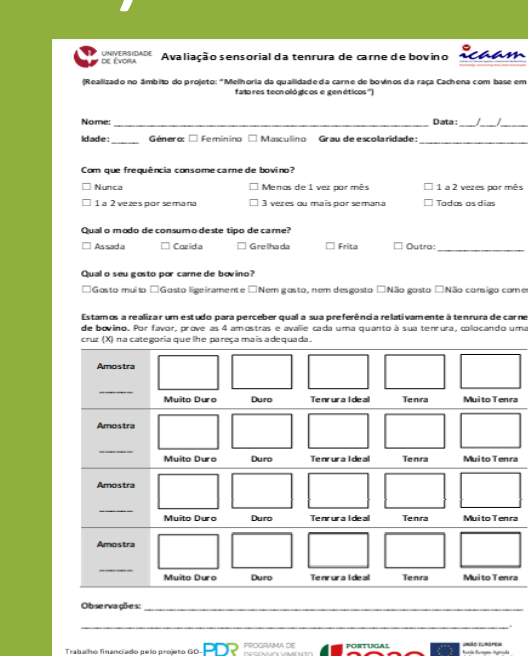
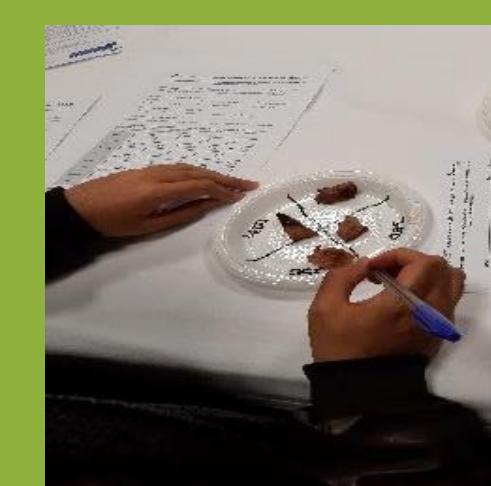
- Warner-Bratzler Shear Force (WBSF)
- Texture Profile Analysis (TPA)



Sensory evaluation

- 250 consumers - asked about frequency, mode of preparation and beef palatability.

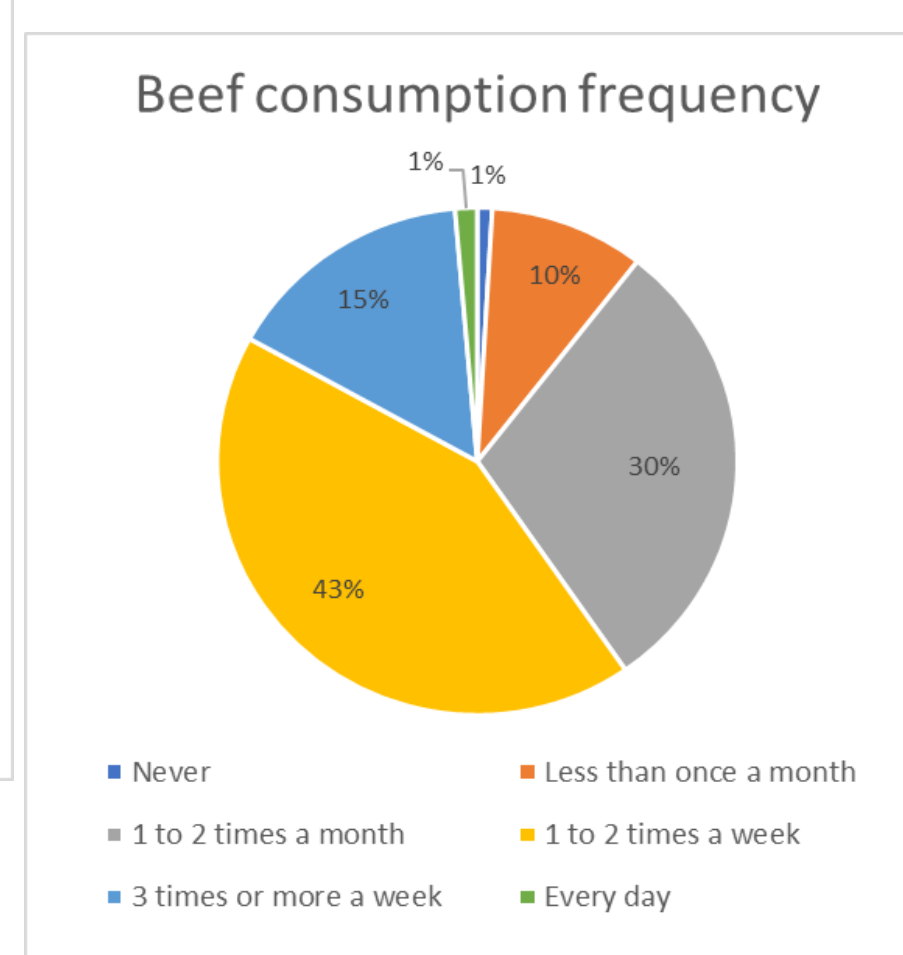
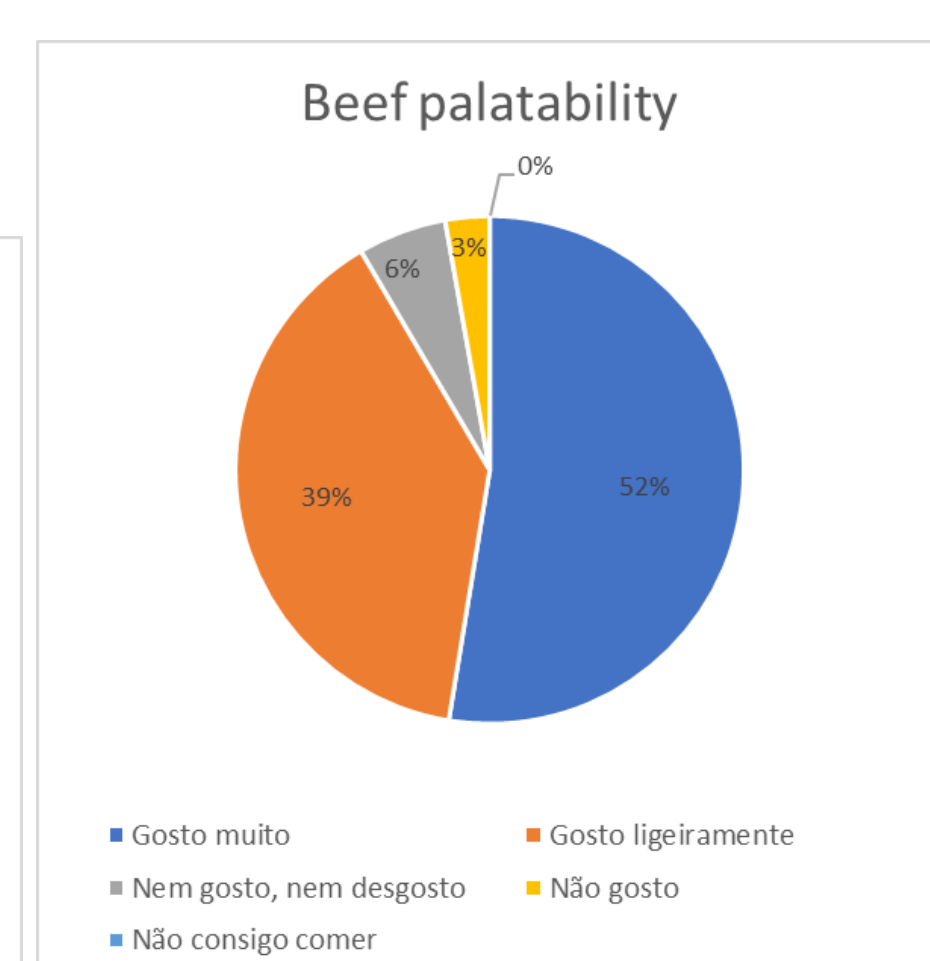
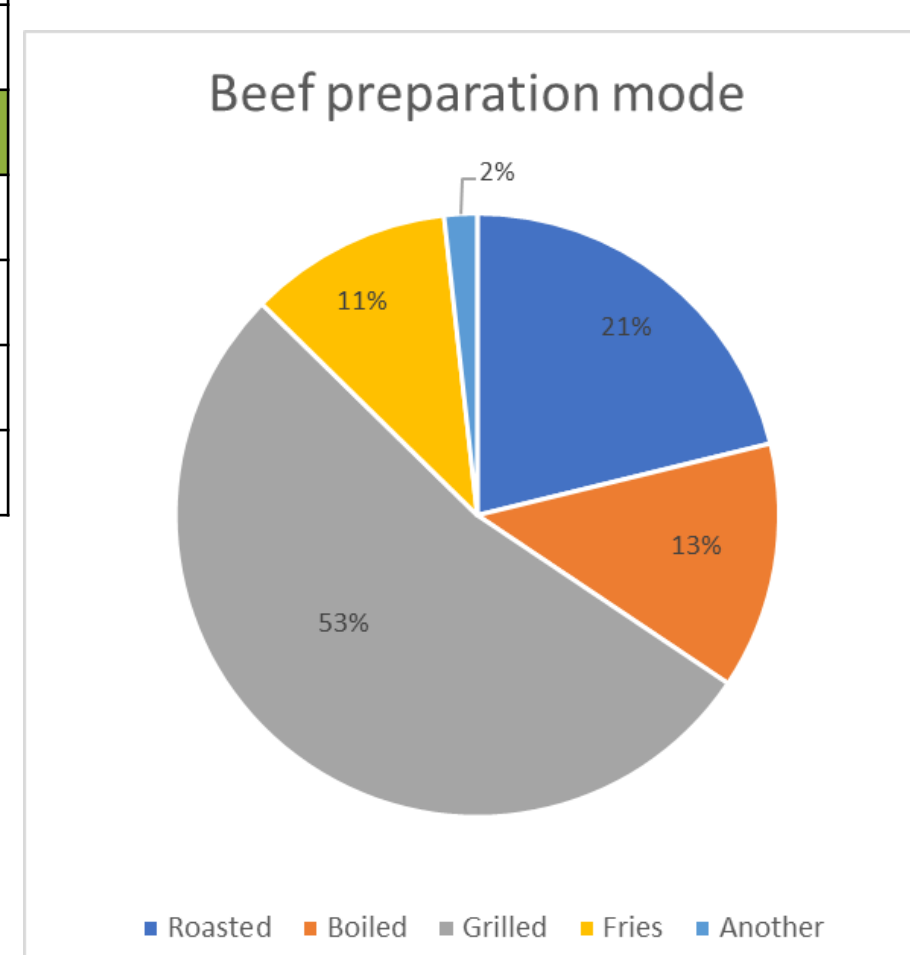
- 5-category hedonic scale (Very Hard, Hard, Ideal Tenderness, Tender and Very Tender).



## RESULTS

### Sensory evaluation – Consumers profile:

Gender	
Female	45,74%
Male	54,26%
Age Group	
15 to 21 years	29,15%
22 to 30 years	22,42%
31 to 45 years	25,56%
46 to 71 years	22,87%



### Tenderness thresholds:

According to the sensory analysis values with those obtained in the instrumental methods, commercial meat is tender and hard when it satisfies the following conditions:

Hedonic category	Compression force (N)	Shear force (N)
Tender meat	11 a 20	15 a 32
Hard meat	> 30	> 37

There is a correlation between the sensory and instrumental evaluation of beef tenderness.

## CONCLUSION

It is not possible to discard one of the instrumental tests, if the aim is to correlate beef measured tenderness with its sensory evaluation.

Both instrumental tests give different information: WBSF test evaluates the meat fibres perpendicularly, as do incisor teeth, while TPA mimics the chewing with molar teeth.