Quality of beef from different production systems marketed in Portugal

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Objectives

This study is a part of a project to ascertain the sensory properties of beef through chemical, instrumental and sensory analysis and to relate them with the Portuguese consumer` preferences. At an hypermarket, consumers were asked to taste, in a blind test, three important types of beef marketed in Portugal in order to identify their preferences. Afterwards, we tried to find in the physical, chemical and sensory characteristics of beef the explanation for such preferences.

The main goal of this particular part of the study was to compare the physical and chemical characteristics of three types of beef marketed in Portugal:
☼ Carnalentejana-**PDO** (Protected Denomination of Origin)
☼ Commercial beef
☼ Brazilian beef

Are these meats distinguishable?

| PDO (n= 16) | Commercial (n = 15) | Brazilian (n = 15) |

Metodology

PDO beef
PDO beef are certified by European Union Regulation 2081/92
Young bulls of Alentejana breed
Semi-extensive grazing system based on pastures under holm and cork oak known as "Montado"
Supplementation with cereals and forages

Commercial beef
Young bulls of several breeds and/or crosses
Intensive production system based on concentrates

Brazilian beef
Young bulls of Brazilian native breeds (e.g. Nelore breed) or crosses with beef breeds (e.g. Angus breed)
Semi-extensive production system

Results

Table 1 – Meat characteristics of PDO, Brazilian and Commercial *longissimus lumborum* muscle

	PDO	Brazilian	Commercial	p[A]
pH	5.6[a]	5.8[b]	5.8[b]	**
L*	33.7	33.5	33.3	ns
A*	21.0	20.8	19.9	ns
B*	3.8	4.4	3.4	ns
Hue	9.9	12.3	9.0	ns
Chroma	21.4	21.3	20.7	ns
Pigments (% DM)	1.6	1.5	1.8	ns
IMfat (% DM)	2.9	2.5	3.0	ns
MFI	51.6[a]	76.8[b]	57.5[a]	*
Collagen (% DM)	2.4	2.3	2.4	ns
Solubility (%)	17.4	18.3	17.4	ns
CL (%)	27.0	28.7	28.4	ns
WBSF (kg)	5.5	5.3	5.4	ns

[A] Statistical probability of treatment: ns, P>0.05; *, P<0.05; **, P<0.01; means in the same row with different subscripts are significantly different; Pigments = Total pigment content; IMfat = intramuscular fat; MFI = myofibrillar fragmentation index; Collagen = total collagen content; Solubility = Collagen solubility (% total collagen content); CL = cooking losses ; WBSF = Warner Bratzler shear force

ʏ Carnalentejana-PDO beef had the lower pH value, which did not cause colour differences between meats

ʏ Brazilian meat had higher myofibrillar fragmentation index, however no differences were found in WBSF in meats

Conclusion

Despite the differences between groups, like breed and production system, meats had similar physical and chemical characteristics

All meats had a good WBSF value (≤ 5.5) ➡ tender meat from the consumer point of view