

RESEARCH REGARDING TEXTURE OF WILD BOAR MEAT (*SUS SCROFA FERUS*) FROM FRASIN AREA, SUCEAVA

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Abstract

Meat provided from hunted species represent a nourishment alternative into a continuous expansiveness due to high nutritive properties, particular taste and continuous interest of husbandry industry, as well as consumers, for diversification (exploitation) of hunting resources at industrial level.

So, the present research aimed to realise an intrinsic exploration of properties of meat gathered from hunted species which are specific to Romania, aiming to create a solid scientific base at national level for effectiveness of a correct information and realization of an accurate general picture on textural profile for this meat.

To achieve the proposed target, determinations were carried out on a total number of 11 adult wild boar individuals (6 males and 5 females), gathered during some hunting parties organized in N-E area of Romania (Suceava Forestry Department, Frasin hunting fund).

Inter-muscular variations of Warner Bratzler forces were described by great amplitude of data, being into interval $14.88 \div 86.63$ N/cm². So, mean tenderness of wild boar meat show for studies muscular samples a penetration force at breaking up of meat portion which varied into an interval inferiorly defined by 34.95 ± 1.86 N/cm² (m. Longissimus dorsi at females) and superiorly by 50.88 ± 2.923 N/cm² (m. Triceps brachii at males).

By statistical analysis of existent differences, inside muscular group, between males and females for Warner Bratzler forces values were observed insignificant differences 75% from the total of effectuated tests.

Keywords: Texture, Wild Boar, Frasin

INTRODUCTION

Texture is influenced by thickness of muscular fibres, their number or density on section, thickness of sacrolemma, sacromere length and type of muscular fibre (red, white, intermediary, myofibrils number, etc.) (Georgescu et al., 2000; Ivanović et al., 2013; Boișteanu et al., 2015; Borilova et al., 2016) meat texture being in a close correlation with other characters, such as, consistency, marmoration or perselation, influencing palatability, gustative and culinary value of meat. In essence, meat texture is given by the following morphological elements: muscular

fascicles size, liaison tissue consistency, muscular fibre thickness, muscular fibres density, muscular fibres structure, meat fibriation, structure and quantity of conjunctive tissue (Lawrie, 2006).

The existent texture differences between carcasses of wild boars with different corporal masses are the result of differences between structural elements (Żochowska et al., 2005; Kumar, 2018; Strazdina et al., 2013), musculature attributed to carcasses with greater weights (older animals) being characterized by a higher hardness and chewiness, in comparison with the musculature gathered from carcasses with a lower weight (youth) (Żochowska-Kujawska et al., 2008; Marsico, 2007).

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MATERIAL AND METHODS

Determinations were realised on 4 muscular regions (*M. Longissimus dorsi*, *M. Semitendinosus*, *M. Triceps brachii*, *M. Trapezius cervicalis*) from 11 wild boar adult individuals (6 males and 5 females), gathered during some hunting trips organised in the N ÷ E area of Romania (Suceava Forestry Department, Frasin hunting fund).

Tenderness evaluation of muscles by Warner Bratzler shear forces included a previous utilization of muscular samples, like this: meat samples were subjected to a thermal treatment by boiling on Bain marine for 45 minutes at 75°C (in polyethylene bags), wrapped after that in aluminium foil, preserved for 24 ore la 4°C and sectioned with a cylindrical shape (3 cylinders with a 1.5 cm diameter and a 2 cm length) in the way of muscular fibres.

For forces' determination was utilised a specific blade (60° angle, velocity 100 mm/min, cutting force 1000 N) attached to texturometer TA Plus Lloyd Instruments. Cylindrical muscular samples were sectioned in a perpendicular way, maximum force necessary to section the sample being the main tracked indicator for description of meat tenderness.

For forces' determination, the device is provided with a rigid plain surface, having a rectangular shape, sectioned in median area and having 3 blades with different shapes: one blade has a square shape and two have a "V" shape.

Software NEXYGEN Ondio integrated into texturometer TA Plus Series allowed direct calculation of share forces function of cutting-deformation curve, this ones being expressed as peaks, correspondingly to maximal recorded value (Honikel, 1998).Also, the system assure texturometer function in according with the demands enounced by BS EN ISO 7500:1999.

RESULTS AND DISCUSSIONS

In current research, primary statistical indicators, calculated for Warner Bratzler forces, which characterize the wild boar meat packed in vacuum, frozen and subjected to a thermal treatment previous to itself determinations, recorded values for means' standard error into interval 1.86 ÷ 4.57, those ones being correlated with a homogeneity degree of index inside sex described by interval 22.47 ÷ 41.94 (table 1).

Table 1 Descriptive statistics of wild boar meat tenderness (Warner Bratzler shear force values)

Specification	Sex	n	$\bar{X} \pm s_{\bar{x}}$	V%	Min. – Max.	
Warner Bratzler (N/cm ²)	LD	M	6	40.13±2.317	23.481	29.7 – 68.89
		F	5	34.95±1.863	22.473	15.03 – 48.85
	ST	M	6	48.52±2.971	25.233	30.60 – 68.12
		F	5	42.45±3.578	31.538	25.80 – 73.45
	TB	M	6	50.88±2.923	23.715	32.64 – 73.11
		F	5	40.29±2.431	26.177	21.23 – 61.44
TC	M	6	48.25±4.579	41.943	14.88 – 86.63	
	F	5	39.43±2.842	31.426	17.91 – 70.08	

LD = *m. Longissimus dorsi*, ST = *m. Semitendinosus*, TB = *m. Triceps brachii*, TC = *m. Trapezius cervicalis*; M – Males; F – Females.

Inter-muscular variations of Warner Bratzler forces were described by great amplitude of data, being placed into interval 14.88 ÷ 86.63 N/cm². So, mean tenderness of wild boar meat enlighten for the studied samples a penetration force at meat portion breaking which varied between a lower value

of 34.95 ± 1.86 N/cm² (*m. Longissimus dorsi* at females) and a higher value of 50.88 ± 2.923 N/cm² (*m. Triceps brachii* la males).

By a comparative analysis of mean forces for each muscular group, was observed the tenderness superiority at the samples gathered from dorsal level of males and



females carcasses, into sex those ones being also the inferior limits (40.13 ± 2.31 N/cm² at males, respectively 34.95 ± 1.86 N/cm² at females) (table 1).

By statistical analysis of the existent differences, inside muscular group, between

males and females for values of Warner Bratzler forces were observed insignificant differences at 75% from the total of effectuated tests and 15% from tests presented distinct significant differences corresponding to *m. Triceps brachii* (table 2).

Table 2 Statistical significance of differences between males and females regarding the values of wild boar meat Warner Bratzler shear forces

	Specification	Signification of differences (Males / Females)
INFLUENCING FACTORS: SEX	M. Longissimus dorsi	$\hat{F} = 3.154; F_{0.05} (1;35) = 4.121; \hat{F} < F_{0.05} \Rightarrow ns$
	M. Semitendinosus	$\hat{F} = 1.823; F_{0.05} (1;35) = 4.121; \hat{F} < F_{0.05} \Rightarrow ns$
	M. Triceps brachii	$\hat{F} = 8.844; F_{0.01} (1;35) = 7.419; \hat{F} > F_{\alpha} 0.01 \Rightarrow **$
	M. Trapezius cervicalis	$\hat{F} = 2.529; F_{0.05} (1;35) = 4.121; \hat{F} < F_{0.05} \Rightarrow ns$

CONCLUSIONS

Wild boar meat tenderness described by Warner Bratzler forces (which expresses the hardness of meat portion, thermal treated, at breaking up) was characterized by means which varied into interval $34.95 \div 50.88$ N/cm², males' musculature having an inferior tenderness to the one determined for samples which were gathered from females carcasses; inter-muscular, muscles *Longissimus dorsi* were defined as having the lowest hardness. By statistical analysis, *m. Triceps brachii* presented distinct significant differences between males and females for Warner Bratzler forces values, 75% from the total effectuated tests for the whole musculature being insignificant.

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