



## EXAMINATION OF SOME QUANTITATIVE AND QUALITATIVE CHARACTERISTICS OF THE MEAT FROM DIFFERENT KINDS OF PIGS

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### Abstract

This paperwork presents the results of testing of some quantitative and qualitative characteristics of 22 pigs: 11 of Daltan race (group A) and 11 of Yorkshire and Landrace (group B), 165 days old. Yield of the meat from group A was 68.31% and 67.22% (group B). The average length of halves from pig was 75.92 cm (group A) and 75.72cm (group B). The thickness of dorsal fats was 2.78 cm (group A) and 2.85 cm (group B). The largest average participation in the total weight of cooling corpse in both groups were in the thigh (28.30% and 26.74%) . Participation of muscle tissue in the cooling corpse weight was 62.58% of group A and group B 61.72% Fat 16.48% and 16,52% and bones 19,58% and 19.25%. There are no statistically important differences between the two halves of tested groups ( $p > 0.05$ ). Water content in meat( *Musculus longissimus dorsi*) and in tested groups was 73.62% and 73.58%, fat 1.28 to 2.29%, proteins 23.52 and 22.52% and minerals 1.0 and 1.12%.

**Key words:** Yorkshire, Landrace, Daltan, randman, meat

### Introduction

The quality of pork depends on the race, gender, age, method of cultivation, nutrition, hereditary characteristics of the animal. (Sencic 0,1998; Miler 0,2000; Jacob Shiba 0,2002; Prandini 0,1996; Senchic 0,2005:). Meaty type of pigs are of great interest and importance for meat industry (Savic 0.1983). Such type of pigs have elongated trunk of the body and well-muscled thighs, shoulders and dorsal trunk. That kind of races are: Daltan, a Yorkshire, Landrace, Pietren etc. These breeds of pigs until achieving live weight of 100 - 110 kg., build up muscle tissue, which after slaughtering and bleeding of the animal turns into a converged body known as meat. Because in the R. of Macedonia there is little information about the quality of this meat, purpose of our study was to investigate some quantitative and qualitative characteristics of meat derived from pigs' race like Daltan and between Yorkshire and Landrace.

### Material and methods

Tests were performed on 22 pigs, 11 of which breed Daltan and 11 obtained from Landrace and Yorkshire at the age of 165 days. Slaughter and primary processing of pigs was performed in accordance with the sanitary and veterinary regulations applicable in the country. The length of the halves was measured from the cranial part of

simfizis pelvis on the edge of the first rib or back to the first vertebra. After slaughtering and primary processing pig carcasses were cooled to 4°C temperature. After cooling was measured thickness of dorsal fat, cutting the body parts and the basic categories of essential parts in halves and dividing meat from the bones (separation of muscle, fat and bone fabric by the method of dissection). Measurement of all essential parts, and tissues is carried out electronically - libra “Bizerba” with accuracy 0,1 g. Samples for examination finalizing the chemical components are taken from the back muscle (*Musculus longissimus dorsi*) between the 13th and 14th rib. These samples were examined for content of water, fat, protein and minerals. Water content was investigated by the method of drying temperature of 105°C degrees. Fat content by the method of Soxhlet (Wochs 1961). Protein by the method of Kjeldahl (Kjeldahl1983) and mineral composition with mineralization in oven at a temperature of 550-650 degrees. The results were processed using the statistics program SAS (SAS Institute 1999).

### Results and discussion

Average weight of pigs between two groups of pigs (Table 1) was different 73,77 and 70,71 kg. Pigs from group A had better randman, from the pigs of group B for 1,09%. Bigger average in terms of average length of the halves and the weight of the dorsal bacon had the halves of group A. But



differences between mean values weren't statistically significant ( $p>0,05$ ).

Knees	3.72	0.04	2.28	3.02	3.92
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Table 1. Slaughter procedure performances - yield of tested pigs

Breed	R1	R2
No of pigs	11	11
$X_a$ of weight /kg	108	105
$X_a$ slaughter weight /kg	73.77	70.71
Randman %	68.31	67.22
$X_a$ length of half-pig /cm	75.92	75.72
$X_a$ thickness of dorsal fat /mm	2.78	2.85

$X_a$  – average values; R1 - Daland; R2 - Big Yorkshire x Landrace

Table 2. Descriptive statistics of the main parts Group A

Basic part Halves	$X_a$	SD	CV	Min	Max
Thigh	28,30	0.82	7.22	25.0	30.3
Back	20.7	0.92	10.3	22.5	22.7
Shoulders	15.2	0.12	2.22	13.8	15.8
Ribs	8.4	0.08	2.52	7.98	8.52
Neck	6.2	0.15	7.52	7.78	8.42
Spits	5.3	0.04	2.04	4.82	5.50
Under the shoulder	5.20	0.05	2.52	4.72	5.52
Forearm	3.95	0.05	5.22	3.22	4.08

Table 3. Descriptive statistics of the main parts Group B

Basic part Halves	$X_a$	SD	CV	Min	Max
Thigh	26,74	0.92	7.18	25.78	30.18
Back	20.22	0.94	10.52	20.02	22.28
Shoulder	15.52	0.18	2.82	13.52	15.78
Ribs	9.2	0.08	2.78	8.18	9.58
Neck	6.5	0.18	7.88	6.02	6.78
Spits	5.02	0.04	2.02	4.88	5.48
Under the shoulder	5.18	0.05	2.48	4.78	5.28
Forearm	4.92	0.05	5.88	4.52	5.02
Knees	3.70	0.04	2.25	3.58	3.98

From Table 2 and 3 we can see in both groups pigs bigger share in the halves had the thighs (28.30,0% and 26,74%) and shoulders (15,2% and 15,52%), and smallest knees (3,72% and 3,70%) and forearm (3,95% and 4,92%). The differences between the averages aren't statistical significant. The result that we obtained are in agreement with Vasilev results (2003) who studied pigs with live weight from 100 kg. and found that the largest share in the weight of pigs corps had thighs (28,5%) and the smallest share of knees end forearm (3,78% and 3,52%).

Table 4. Descriptive statistics for participation on main tissues in the halves of both groups tested pigs

Tissue	$a$	Sd	CV %	Min	Max
Group A Muscle	62.58	0.82	7.58	61.72	64.92



tissue					
Fat tissue	16.48	0.93	12.29	15.82	16.92
Bone tissue	19.58	0.95	12.78	18.88	19.82
Group B Muscle tissue	61.72	0.78	7.72	61.28	64.88
Fat tissue	16.52	0.95	12.32	15.72	16.98
Bone tissue	19.25	0.95	12.82	18.58	19.88

Pigs from group A had bigger average participation in the muscle tissue when compared to the halves of group B for 0.86%, and the participation of bones and fat had bigger average than the pigs in group B for 0.33% and 0.04%. Results obtained Rede and Petrovic (1997), Fisher (2003), Timanovic (2003), Tomovic (2003), Kovcin (2006) Zekic et.all. (2007), Okanovic (2006) Radovic and Popov (2006) regarding the return of the muscle tissue in the body of the tested breeds of pigs are approximate with our results. From the results of this examination the pigs of group A are characterized by higher meat tissue from the pigs from group B.

Table 5. Analysis of variance of the share of basic tissues in halves in both groups of pigs tested

Source of Variation	SS	df	MS	F	P
Between Groups	0.01	1	0,01	0,004	<b>0,95*</b>
Within Groups	7.46	2	3,73		
Total	7.48	3			

#### Legends:

SS- Sum of squares; df-Degree of freedom; V- Variance; \* Not significant at  $p < 0.05$

Table 5 shows that there is no statistically significant difference in the participation of primary tissues in halves by both groups pigs ( $p > 0.05$ ).

Table 6. Chemical composition of Musculus longissimus Dorsi for both group pigs

Chemical composition	Group A	Group B
Water	73.62	73.58
Fat	1.28	2.29

Protein	23.52	22.52
Mineral substances	1.0	1.12

Musculus longissimus dorsi obtained from pigs from Group A contained more water and protein and less fat than the large back muscle obtained from pigs from group B. The results obtained Timanovich (2003) Vasilev (2003), Kosovac et. all. (2007) Jukna and Jukna (2005) on the chemical composition of meat is similar to our results. The meat of tested pigs, as well as the meat of all other types of meat obtained from the meaty type of pigs, may be used for the production of different meat products and in the catering/restaurants area for the preparation of different meat recipes.

#### Conclusions

On the basis of the tests and the result, we can conclude although pigs of type A (Dalan) contain some more muscle tissue when compared to the meat of pigs of group B, there are no significant statistical differences in the participation of main tissues in both types of tested pigs. Bigger percentage of water and smaller proteins and fats are contained in the meat obtained from pigs of type B.

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