CONFORMATION AND LEAN MEAT CONTENT OF THE BELLY IN GILTS AND BARROWS

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Abstract

A total of 215 pig carcasses were included in the analysis. The analysed set represented the current pig production in the CR with respect to an equal gender ratio and the most frequently used hybrid combinations. The emphasis was put on the conformation and lean meat content of belly as affected by gender. The weight of belly with bones was 4278 ± 65.3 g, i.e. 9.40 ± 0.082 % of carcass weight in gilts. In barrows, it was 4206 ± 74.0 g, i.e. 9.38 ± 0.077 %. No significant differences were found between genders in this trait. Gender differences were confirmed in the proportions of different tissues in the carcass, especially in the proportions of lean meat and intermuscular fat. Besides the total lean meat content, gilts also had a higher lean meat content of belly compared to barrows (57.17 ± 0.532 % and 55.18 ± 0.535 %, respectively). For intermuscular fat, an opposite result was obtained with a lower average value in gilts than in barrows (15.97 ± 0.382 % and 18.25 ± 0.405 %, respectively). The gender differences in bone and skin with subcutaneous fat proportions of belly were small and insignificant.

Key Words: Pig; carcass composition; lean meat content; belly

Introduction

Pig production profitability is strongly influenced by the achieved level of reproduction and production traits. Carcass value is one of the most important production traits which, through the lean meat content of the carcass, significantly affects the economic efficiency of pig production. With respect to the lean meat content, attention is paid not only to main meat parts but also to belly (Pfeiffer et al., 1993; Tholen et al., 2003). At the same time, this part is also positively perceived by consumers due to its price and eating quality (Pour and Pourová, 2004).

The variability of belly composition, especially lean meat content, results in significant differences (as much as 70 %) in its price (Tholen et al., 1998).

Producers as well as meat industry benefit from the knowledge of factors that influence carcass and belly composition. When the differences between genders are evaluated, higher values of lean meat content are usually reported in gilts than in barrows (Daumas et al., 1998; Kernerová et al., 2007). Similar tendencies are also shown in belly composition (Čítek et al., 2001; Stupka, Šprysl and Pour, 2004). The authors observed higher lean meat and lower fat contents of belly in gilts compared to barrows.

The objective of the study was to evaluate the effect of gender on the proportion of belly in carcass and on tissue composition of belly.

Material and Methods

A total of 215 carcasses from pig final hybrids were included in the evaluation. The carcasses were from the most frequent hybrid combinations and from the production conditions commonly used in the CR. The ratio of gilts and barrows was almost 1:1 and the average carcass weight was 90.08 ± 0.775 kg.

Left carcass sides were dissected 24 h *post mortem*. A detail dissection of belly based on the method of Walstra and Merkus (1996) was then performed. Within this method, the belly (belly EU) consists only of the part belly with bones. The belly CR, however, consists of belly with bones, belly without bones, and tip of belly. During the dissection, the main tissues – lean meat, intermuscular fat, bones, and subcutaneous fat with skin - were separated.

The results are presented as weights of EU and CR belly and their proportions of the carcass weight. The dissection results are given as the weights of different tissues and their proportions of the belly weight. The differences between gilts and barrows were determined for all the traits studied.

Data were analysed using the procedures MEANS and GLM of the SAS programme (SAS Institute Inc., 2001).

Results and Discussion

The results of carcass analyses and detailed anatomic dissections of the belly are shown in Table 1 and Figure 1. The average weight of belly CR was 7966.38 ± 110.794 and 7765.83 ± 130.838 g in gilts and barrows, respectively. The difference was statistically significant. The effect of carcass weight on this trait is eliminated by the fact that although the carcass weight of gilts was 1.45 kg higher than in barrows (90.80 ± 1.016 and 89.35 ± 1.175 kg, respectively), this difference was not significant. When the proportions of belly CR from gilts and barrows

were compared (17.52 ± 0.115 and 17.33 ± 0.128 %, respectively), the difference was insignificant. It is evident that the significance of differences shown in absolute values is to a great extent eliminated when the differences are expressed as proportions of carcass weight.

The proportion of belly with bones of carcass weight was similar in both genders – 9.40 ± 0.082 % in gilts and 9.38 ± 0.077 % in barrows. In agreement with our results, Čítek (2002) found no differences in this trait between genders. On the contrary, Stupka (2002) reported significant differences between gilts and barrows in the proportions of belly EU of carcass weight (9.56 and 9.96 %, respectively) and of belly CR (53.84 and 55.39 %, respectively).

We have also observed the tissue composition of belly. The lean meat weight of belly with bones was 2428.95 ± 33.902 g and 2300.67 ± 35.066 g in gilts and barrows, respectively. This difference (72 g) was statistically significant, as well as the difference in intermuscular fat (694.97 ± 22.828 and 783.22 ± 26.639 g in gilts and barrows, respectively). It corresponded with significant differences in the proportions of these traits of the belly with bones weight. The lean meat content was higher in gilts by 1.99 percent points (57.17 ± 0.532 and 55.18 ± 0.535 %, respectively). The proportion of intermuscular fat was 15.97 ± 0.382 and 18.25 ± 0.405 % in gilts and barrows, respectively. The proportion was 2.28 percent points higher in barrows. These tendencies are confirmed in the reports by Willam et al. (1990), Bruwe et al. (1991), and Baulain et al. (1998).

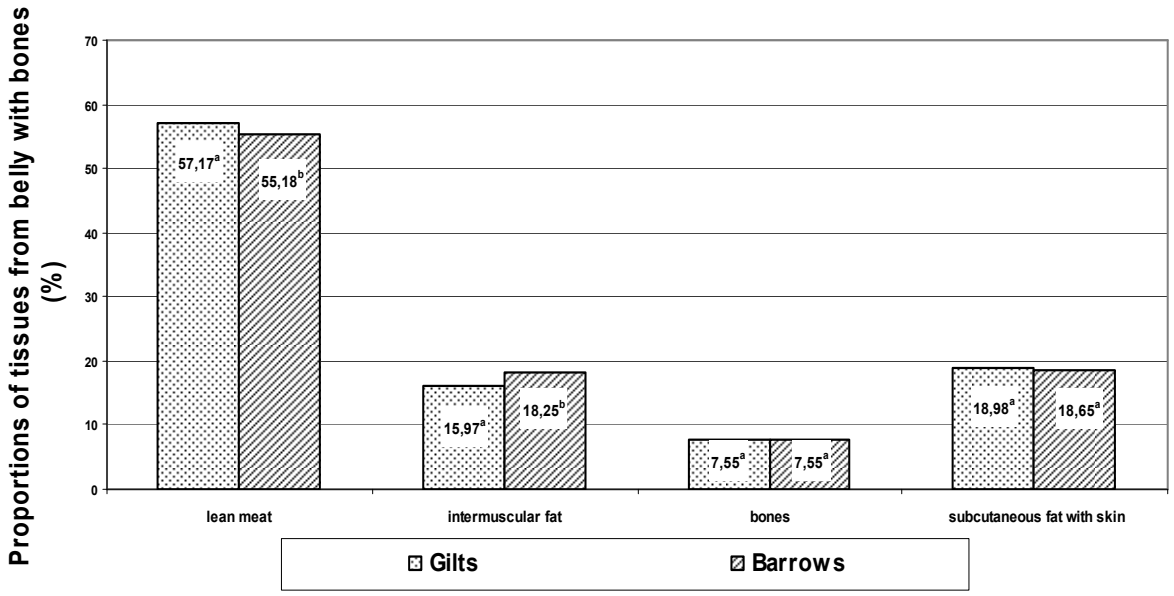
In the remaining tissues, the gender differences were not significant both for absolute values and proportions.

Table 1. The effect of gender on the results of carcass analyses and belly dissections

Trait	Gilts	Barrows
	$\bar{x} \pm s_{\bar{x}}$	
Weight of belly CR (g)	7966.38 ± 110.794[a]	7765.83 ± 130.838[b]
Weight of belly with bones (EU) (g)	4277.68 ± 65.314[a]	4205.77 ± 73.990[a]
Proportion of belly with bones of carcass weight (%)	9.40 ± 0.082[a]	9.38 ± 0.077[a]
Proportion of belly CR of carcass weight (%)	17.52 ± 0.115[a]	17.33 ± 0.128[a]
Proportion of belly with bones of belly CR weight (%)	53.67 ± 0.314[a]	54.23 ± 0.338[a]
Weights of tissues from belly with bones (g):		
lean meat	2428.95 ± 33.902[a]	2300.67 ± 35.066[b]
intermuscular fat	694.97 ± 22.828[a]	783.22 ± 26.639[b]
bones	319.44 ± 4.873[a]	313.61 ± 5.063[a]
subcutaneous fat with skin	820.10 ± 22.070[a]	792.84 ± 22.269[a]
Proportions of tissues from belly with bones (%):		
lean meat	57.17 ± 0.532[a]	55.18 ± 0.535[b]
intermuscular fat	15.97 ± 0.382[a]	18.25 ± 0.405[b]
bones	7.55 ± 0.103[a]	7.55 ± 0.102[a]
subcutaneous fat with skin	18.98 ± 0.329[a]	18.65 ± 0.304[a]

[a, b] $P \leq 0.05$

Figure 1. The effect of gender on the results of belly dissections



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