60th Annual Meeting of the European Association for Animal Production — Barcelona from 24th to the 27th August 2009

S.40 „Pig Production Free Communications“

THE INFLUENCE OF THE GENE MYF-4 ON THE CARCASS VALUE IN PIGS

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Objective

The purpose of the studies was to demostrate to what degree genotypes of Myf-4 gene have influence on the carcass value in pigs. Myogenin (Myf-4) is a member of the basic helix-loop-helix family of skeletal muscle-specific transcription factors.

Materials and Methods

The investigation covered 67 porkers, including purebred LW, and the following crossbred pigs: LWxL and (LWxL)xPn. The animals were fed a commercial diet (Šimeček et al., 2000) and were slughtered at an average (±s.d.) live wieght of 105±5kg, were collected blood samples and phenotypes (carcass value).

The genomic DNA was isolated from blood leukocytes. Genotypes MYF-4/MspI were identified by the PCR/RFLP method.

The asociation analyses between single SNPs g.2394 and growth rate and fatness traits were performed with a statistical model using the GLM model procedur with significans P<0,05 (SAS 9.1, SAS Istitute). The statistical model:

$$Y_{ij} = \mu + A_i + B_j + \beta_m + e_{ij}$$

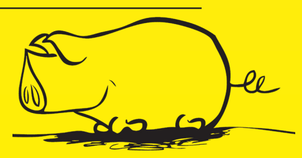
where: Yij= the carcass quantity traits, μ =the overall mean, A_i = the effect of Myf-4 genotype (i = 1, 2, 3), B_j = effect of sex (l= 1,2), β_m= the effect of carcass body weight, e_{ij}= the random residual.

Results

Table 1. The associations of Myf-4 SNPs with fatness and growth rate traits in pigs

		AA	AB	Pr > |t|
Average daily gain (AVDG)	g	949.38	991.78	0.0201
Backfat thickness (LBF)	mm	23.29	25.61	0.0457
Lean meat of the carcass body:ZP	%	55.17	51.79	0.0031
Lean meat of the carcass body:FOM	%	54.05	50.84	0.0044
Weight of meat parts	kg	23.54	23.08	0.488
Weight of meat parts	%	49.11	47.39	0.0853
Fat of meat parts	kg	8.00	8.99	0.0481
Fat of meat parts	%	16.60	18.43	0.0358
Lean meat of belly (LMB)	%	51.15	47.76	0.0166
Fat of belly 1 (FB1)	%	33.83	37.70	0.0462
Fat of belly 3 (FB2)	%	41.86	48.09	0.0444

MP kg	Meat parts	WCH kg	Weight of loin kg
MP %	Meat parts	WCH %	Weight of loin %
FMP kg	Fat of meat parts kg	WL kg	Weight of ham kg
FMP%	Fat of meat parts %	WL %	Weight of ham %
WN kg	Weight of neck kg	WB kg	Weight of belly kg
WN %	Weight of neck %	WB %	Weight of belly %
WSH kg	Weight of shoulder kg	x	Mean
WSH %	Weight of shoulder %		

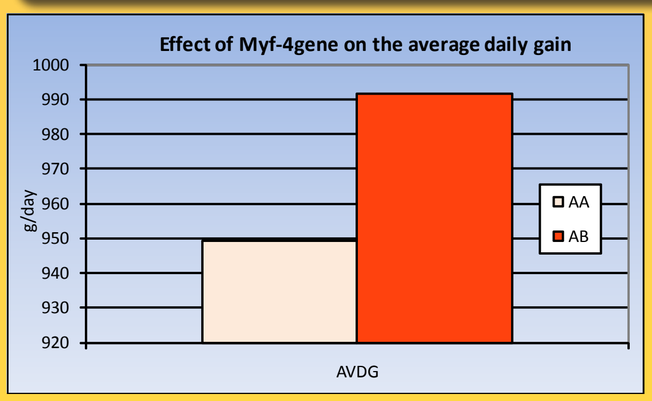


This research was supported by the Ministry of Agriculturae (QG 60045) and the Ministry of Education of Czech Republic (MSM 60460709).

Conclusions

- The allelic frequencies of the MYF-4 mutation were 0.66 for the A allele (353 bp) and 0.34 for the B allele (219 and 134 bp).
- Out of 23 carcass traits in pigs 8 were significantly :
  - for the **avarage daily gain** (AB: 991.78 g and AA 949.35 g ; P<0.05),
  - for the **lean meat of belly** (AA 51.15 %, AB 47.76 %; P<0.05),
  - for the **lean meat of the carcass body** (ZP method: AA 55.17%, AB 51.79%; FOM: AA 54.05, AB 50.84%; P<0.01),
  - for the **fat of meat parts** (AA 8 Kg, AB 9Kg; P<0.05),
  - for the **fat of belly** (belly 1: AA 33.83% AB 37.699%, bally 3: AA 41,86% AB 48.09%; P<0.05),
  - for the **lumbar BF** (AA 23.29 mm, AB 25.61 mm; P<0.05).

These results indicate the influence of Myf-4 genotype on selected production traits in pigs.



Myf-4/MspI (1=353; 2=219 + 134)