Effect of genotype on fatty acid composition of several muscles (LT, ST, PM) of young fattening bulls

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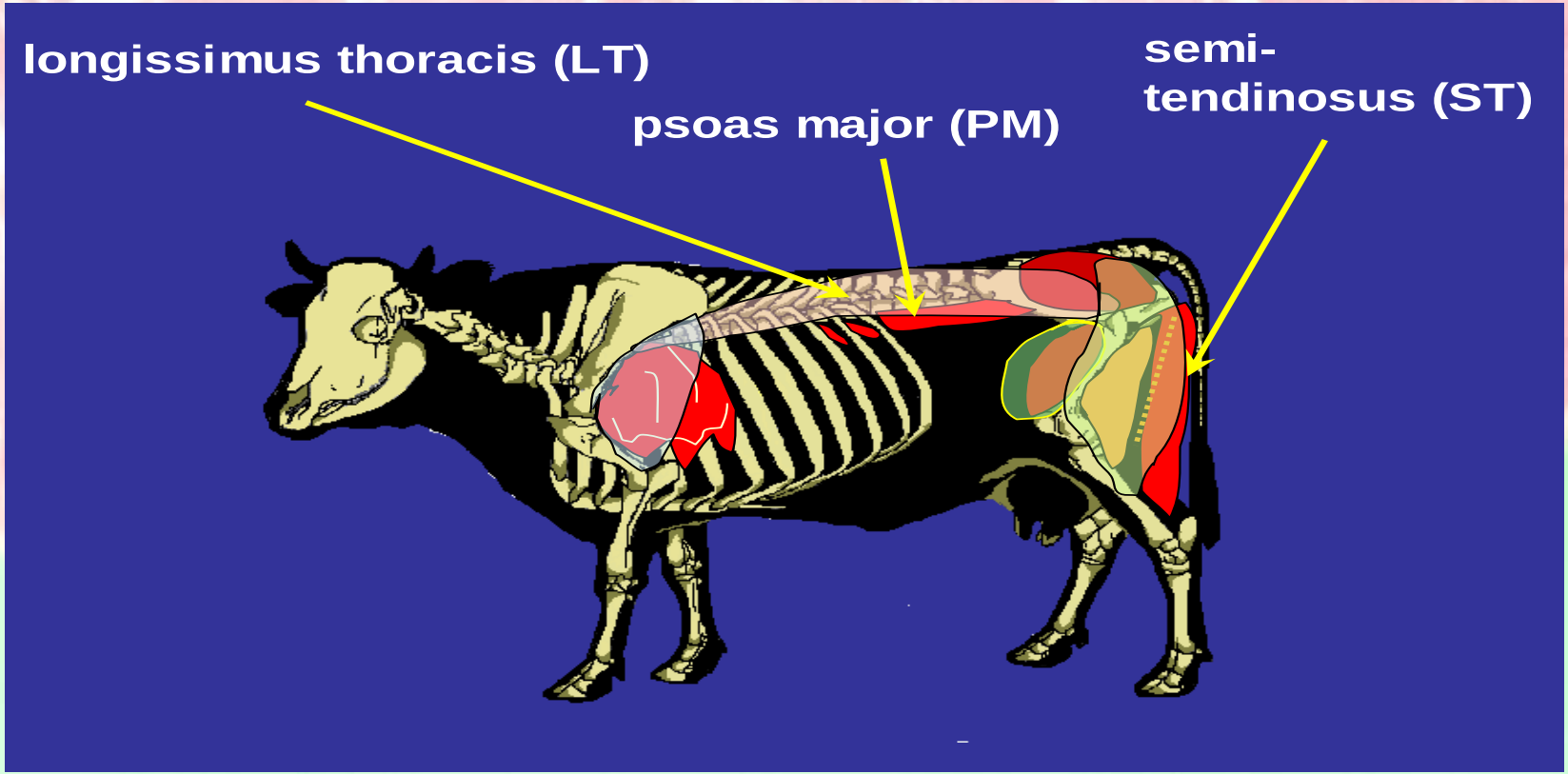
Objective

To increase the *n*-3 fatty acid content of bovine muscles (*longissimus thoracis*-LT, *semitendinosus*-ST, *psoas major*-PM) in different cattle genotypes by using linseed supplementation during last finishing period.



Materials and methods I.

Six different genotypes

Angus (A)

Charolais (CH)

Holstein (H)

Hungarian Grey (HG)

Hungarian Simmental (HS)

Charolais x Hungarian Grey (CHxHG)

Fed under the same conditions (ad lib. maize silage and grass hay, concentrate)

At finishing period concentrate contained 25 % linseed supplementation.

The final live weight was determinate at 600 kg.

Materials and methods II.

Meat samples from three bovine muscles (*longissimus thoracis - LT, semitendinosus-ST, psoas major-PM*) were taken from the right half carcasses after 24hrs chilling

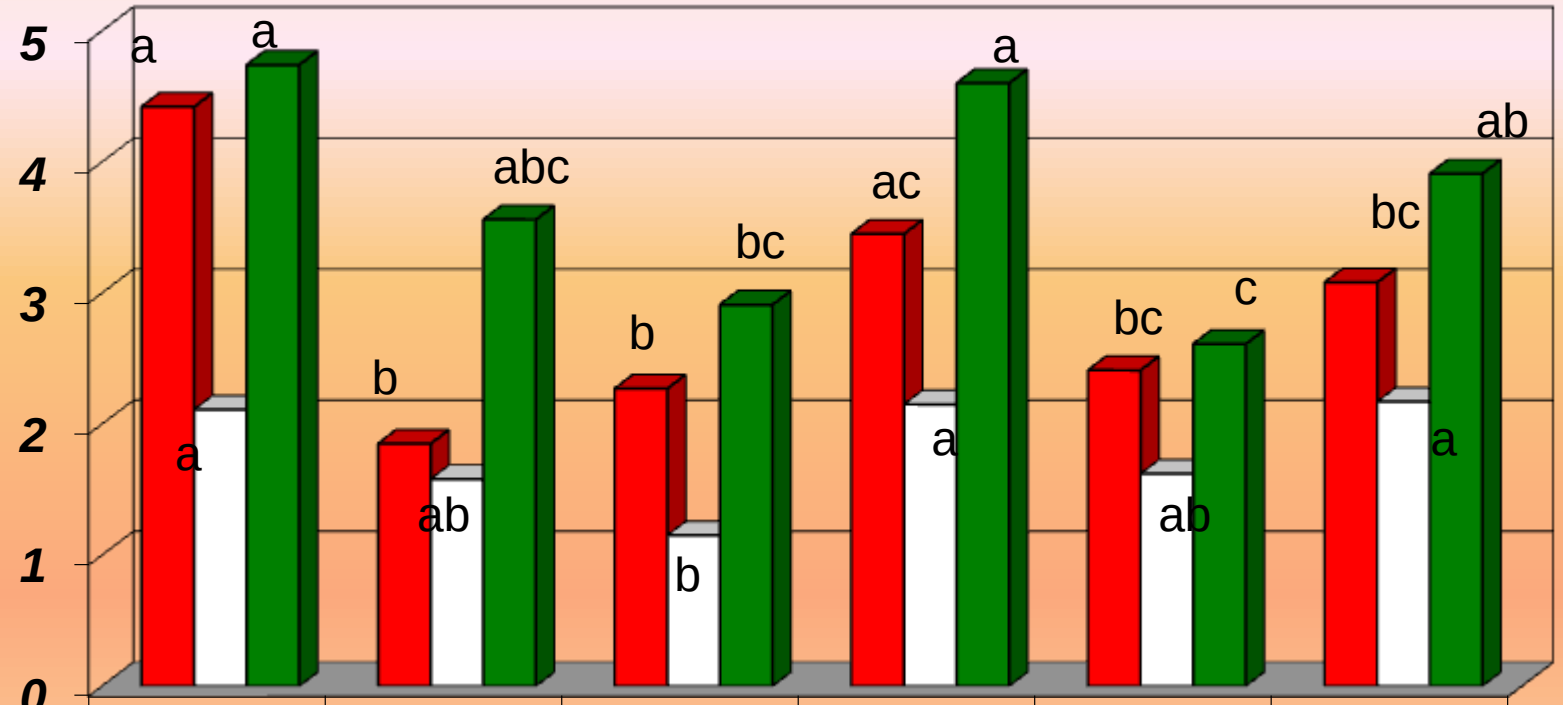
Laboratory analysis was made at the Analytical Laboratory of Kaposvár University, Faculty of Animal Science,

Statistical analysis was performed by SPSS 10.0,

Separate fatty acids and fatty acid groups (SFA, MUFA, PUFA, *n*-3 and *n*-6) were evaulated.

Results

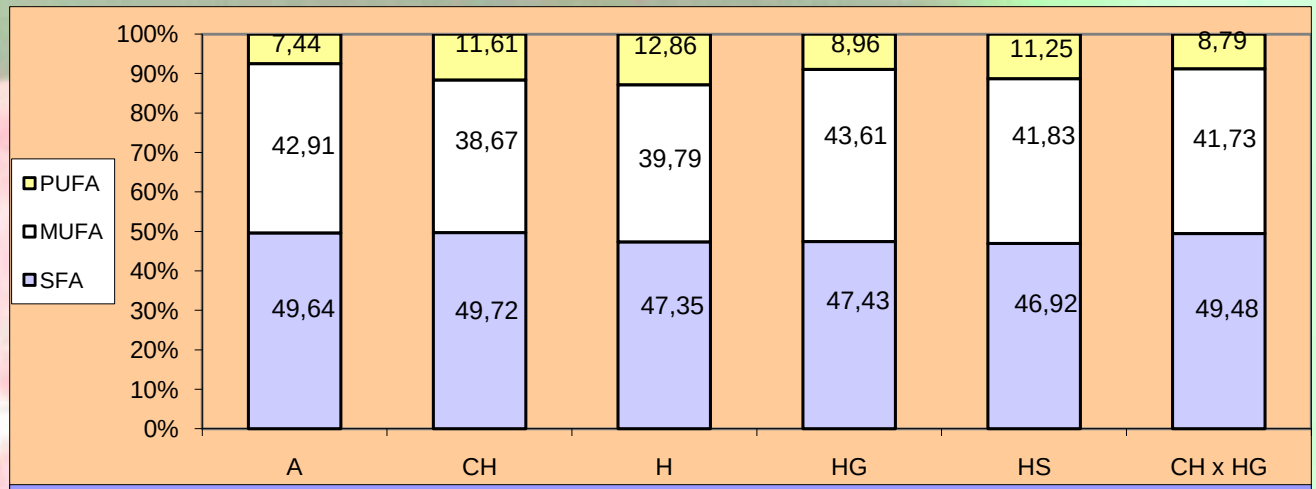
Intramuscular fat composition (%) of *longissimus thoracis, semitendinosus* and *psoas major*



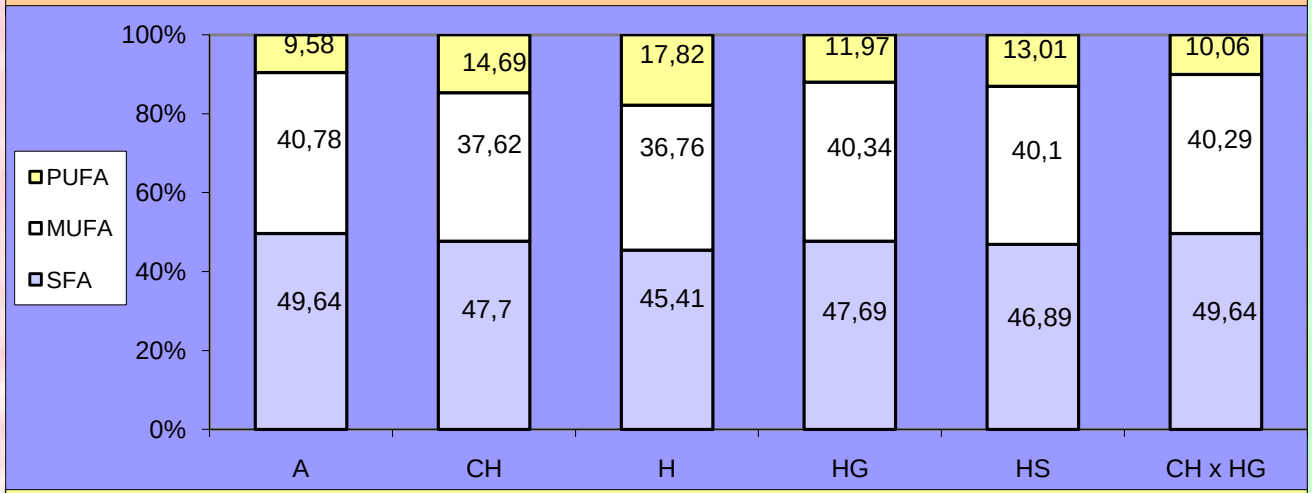
	A	CH	H	HG	HS	CH x HG
LT	4,42	1,85	2,27	3,45	2,41	3,08
ST	2,11	1,58	1,15	2,15	1,62	2,17
PM	4,74	3,56	2,91	4,6	2,61	3,91

Results

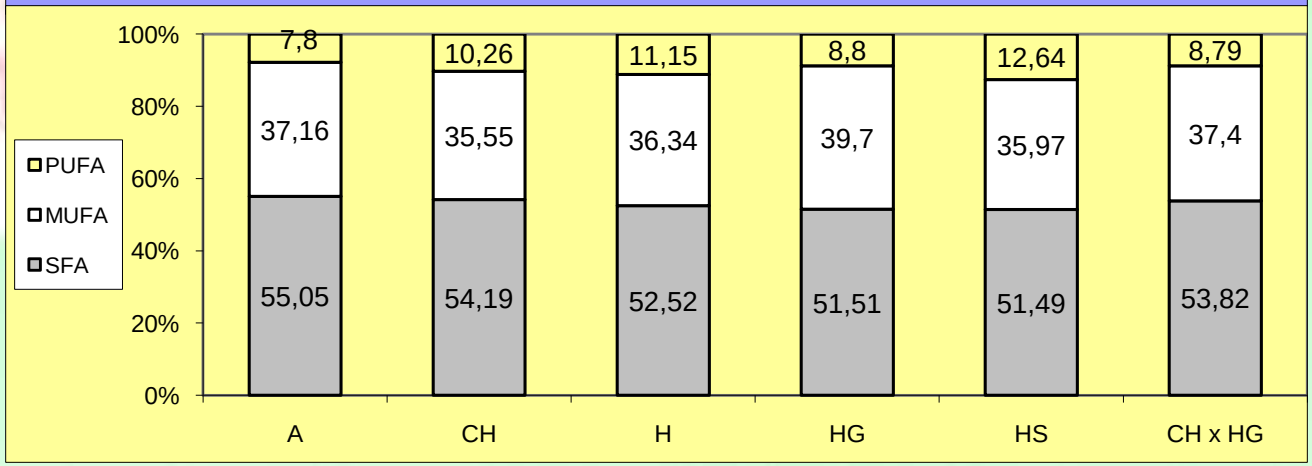
Fatty acid composition (%) of *longissimus thoracis* by different genotypes



Fatty acid composition (%) of *semitendinosus* by different genotypes

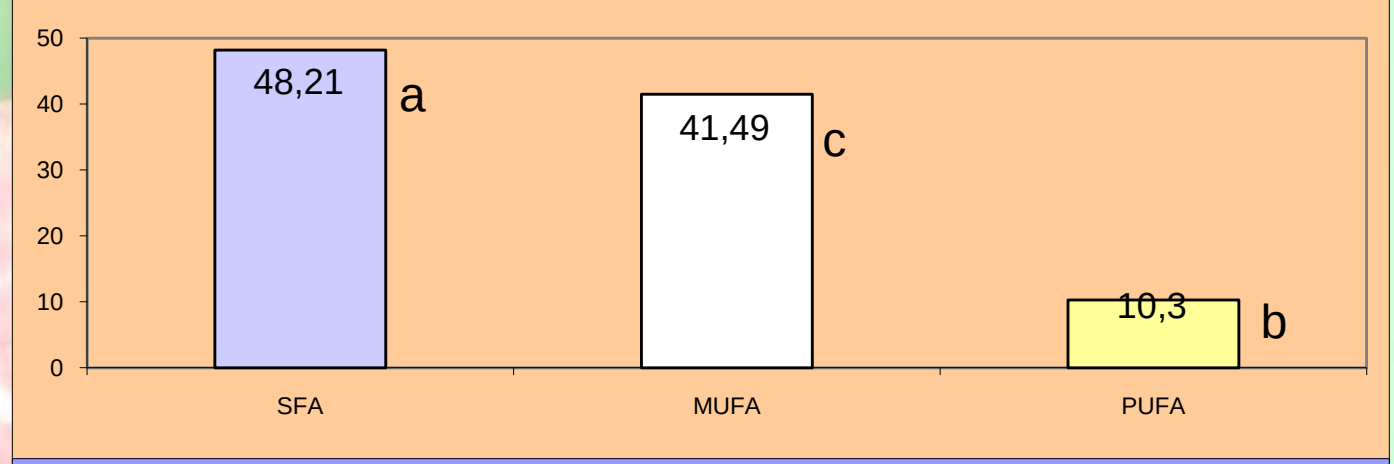


Fatty acid composition (%) of *psoas major* by different genotypes

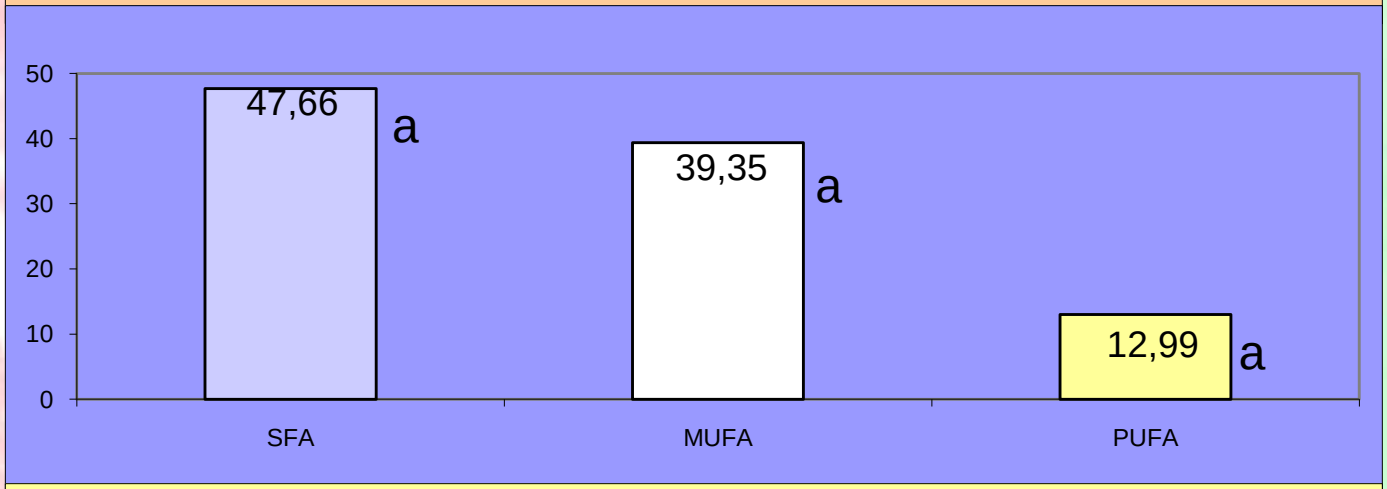


Results

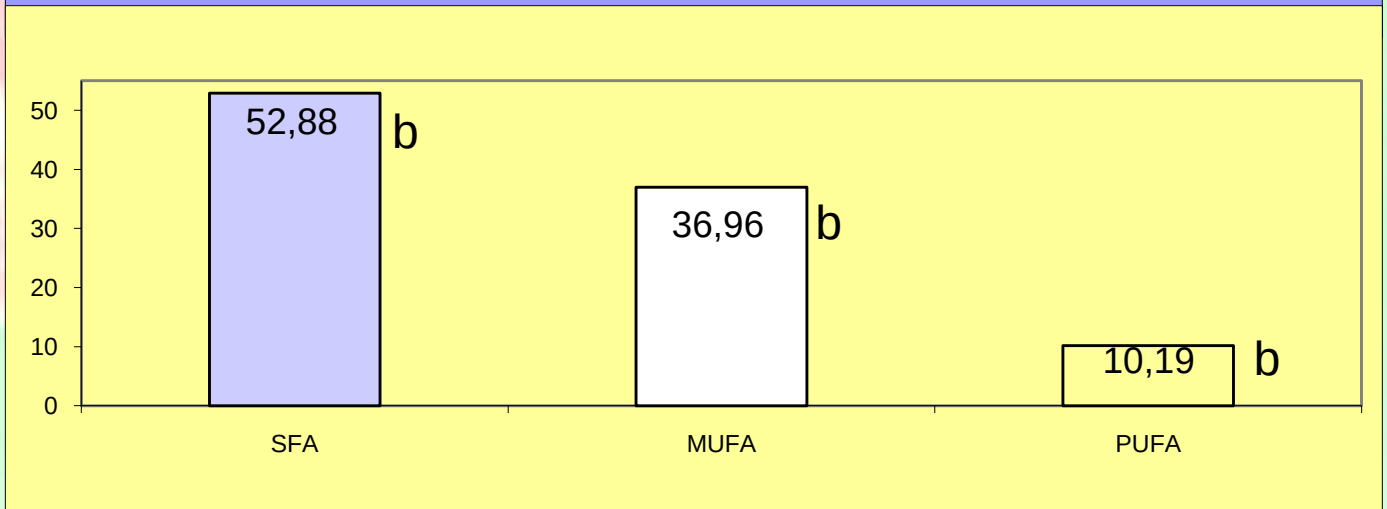
The mean of fatty acids in *longissimus thoracis*



The mean of fatty acids in *semitendinosus*

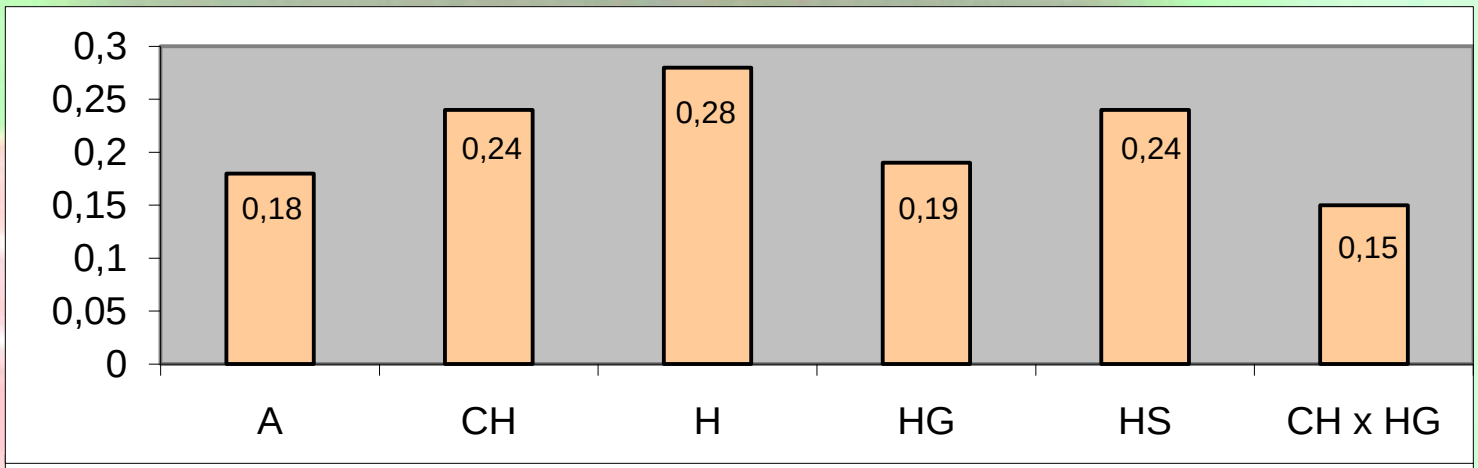


The mean of fatty acids in *psoas major*

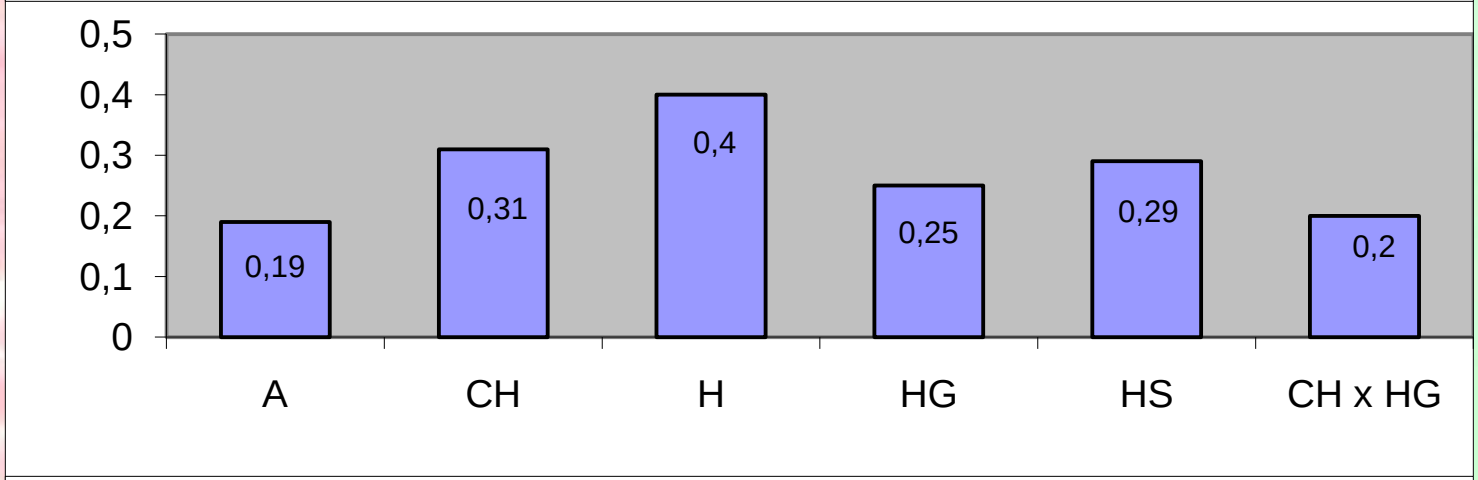


Results

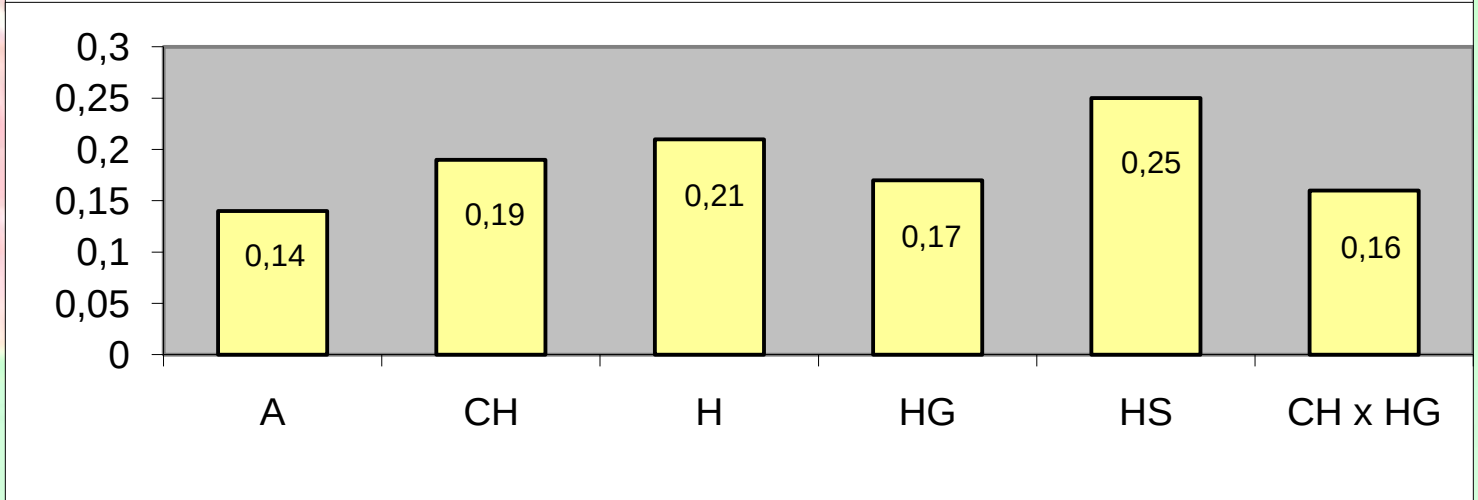
The PUFA/SFA ratio of different genotypes by *longissimus thoracis*



The PUFA/SFA ratio of different genotypes by *semitendinosus*

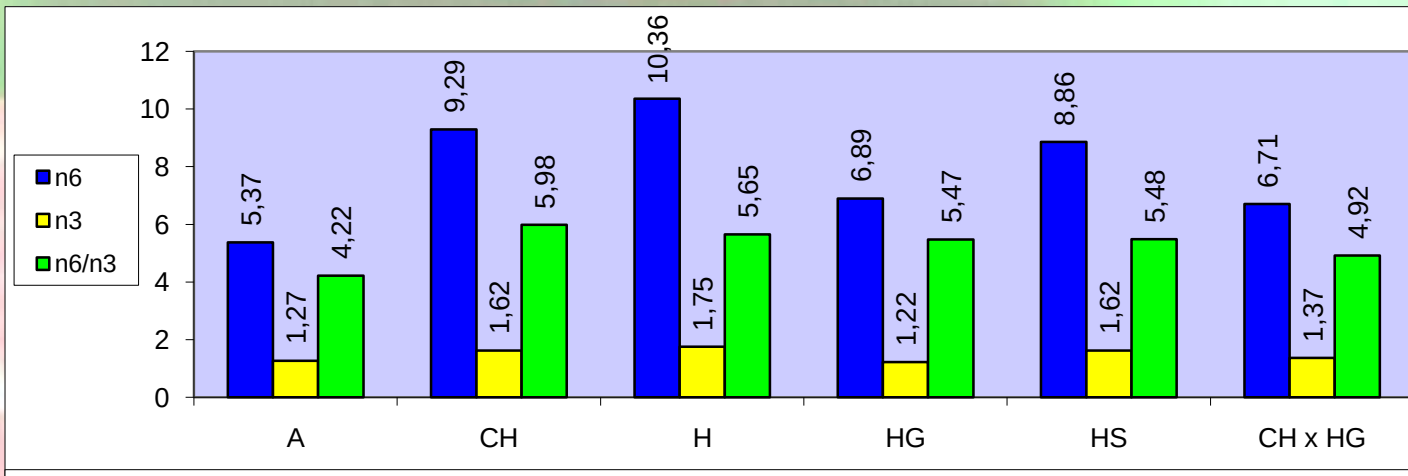


The PUFA/SFA ratio of different genotypes by *psoas major*

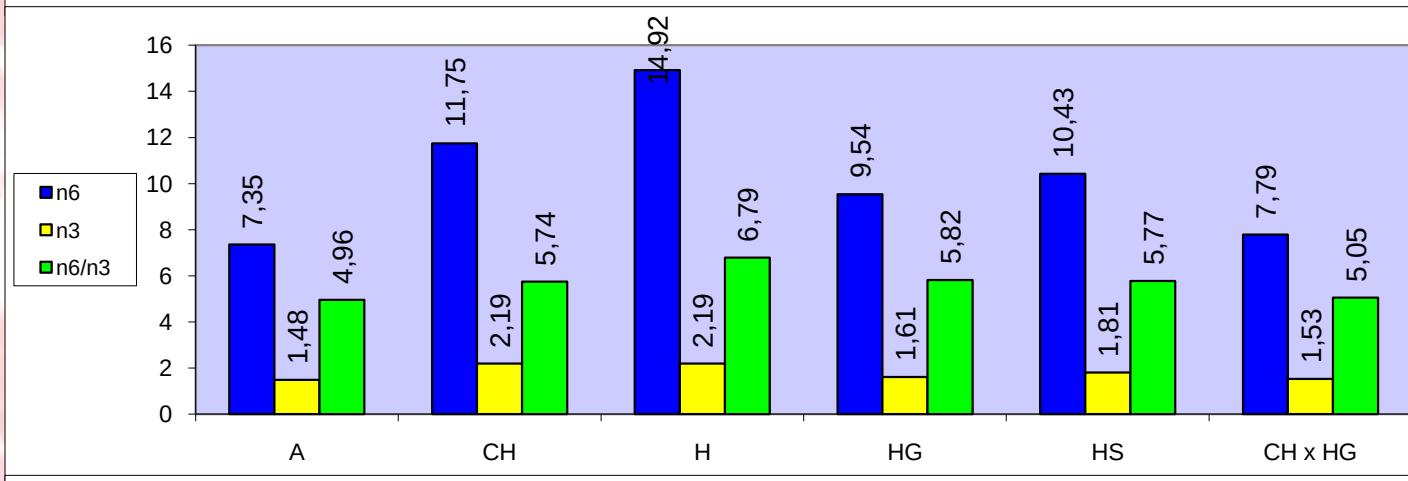


Results

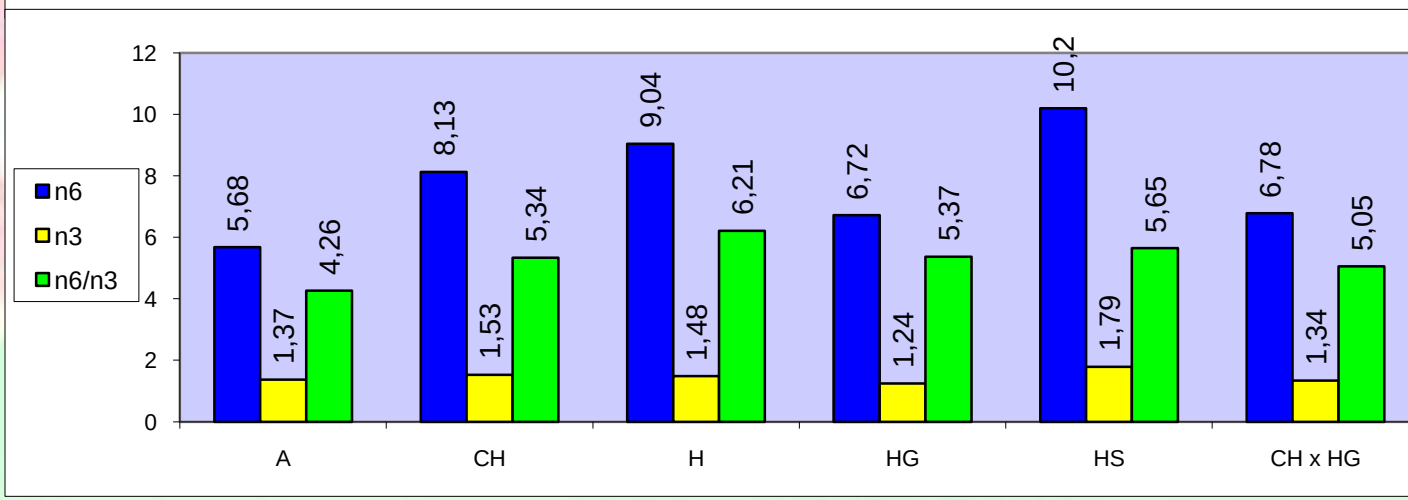
Changes of level of *n*-6 and *n*-3 fatty acids and the ratio of *n*-6 /*n*-3 of different genotypes by *longissimus thoracis*



Changes of level of *n*-6 and *n*-3 fatty acids and the ratio of *n*-6 /*n*-3 of different genotypes by *semitendinosus*



Changes of level of *n*-6 and *n*-3 fatty acids and the ratio of *n*-6 /*n*-3 of different genotypes by *psoas major*



Conclusions

- Significant differences were detected in intramuscular fat content(IM) and fatty acid composition of different genotypes, in spite of same housing and feeding conditions.
- Intramuscular fat content of Angus bulls was significantly higher than the other genotypes.
- SFA was significantly higher for the PM than other two, due to the high level of IM. The highest MUFA was detected in LT, whereas ST contained the highest PUFA.
- The *n*-6 fatty acids were affected either by breed, or by muscle type.
- In PM muscle significant differences were found for n-3 fatty acids level.
- The ratio of *n*-6 /*n*-3 was ranged from 4.48 to 6.22 and significantly less favourable in H than in A bulls. LT resulted in beneficially lower *n*-6/*n*-3 ratios in muscles in all groups.