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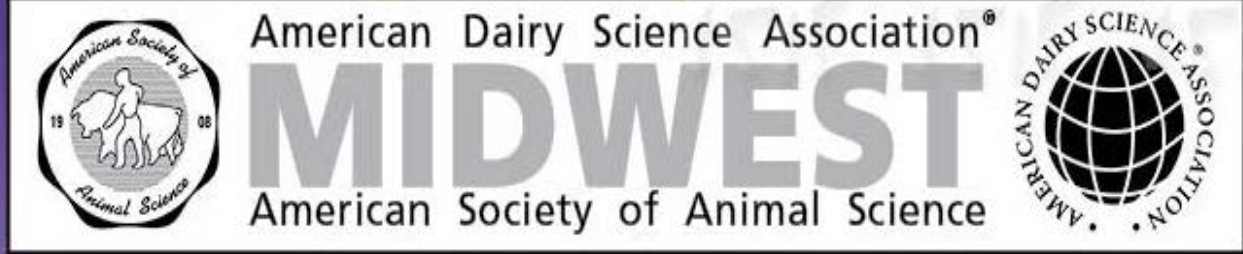
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# Effects of cold rearing temperature on meat quality parameters of loin and ham muscles in pigs



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## Abstract

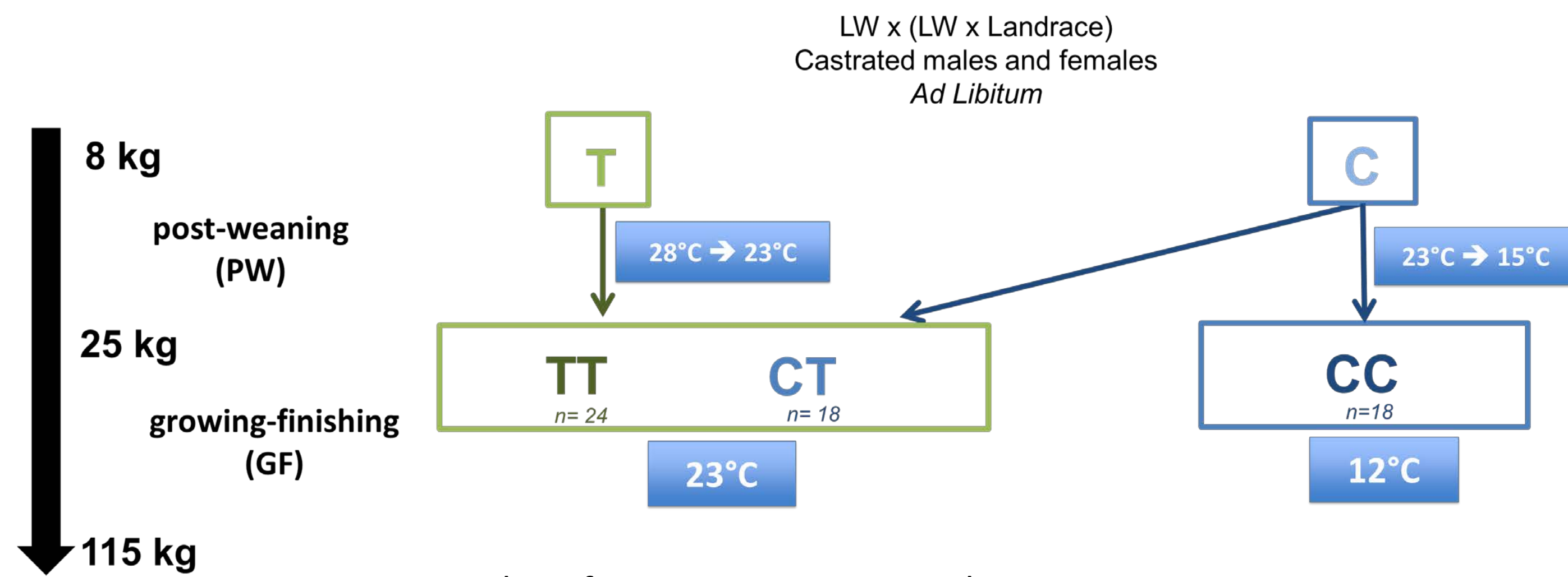
This study aimed at evaluating the influence of cold (C) rearing environment versus thermoneutrality (T) during post-weaning (C: 23°C to 15°C; T: 28°C to 23°C) and growing-finishing periods (C: 12°C; T: 23°C) on pig *Longissimus* (LM) and ham, *Adductor* (AD), *Semimembranosus*(SM), *Gluteus superficialis* (GS), muscle metabolism and meat quality, and determining the reversibility of these effects. Three groups of pigs were constituted according to their post-weaning and growing-finishing thermal environments: CC (n=18), CT (n=18) and TT (n=24). In LM muscle, CC pigs had higher glycolytic potential (GP, P<0.001) and lower pH 24h p.m. (pHu, P<0.001), higher drip loss (P=0.02), color saturation and intramuscular fat (IMF, P<0.001) content compared with TT. In AF and SM muscles, CC pigs exhibited also lower pHu compared with TT and CT. CT pigs exhibited higher pHu, lower GP but similar IMF and drip as TT pigs in LM. No difference in color were found between CT and TT pigs in LM and GS, but CC pigs exhibited higher redness and yellowness in both muscles. Cold environment affected appearance (higher redness) and texture (lower fibrousness) of loin and improved pork odor, but did not modify tenderness or juiciness. Short and long term effects of low temperature during rearing period could explain meat quality differences at commercial slaughter weight. Most of short-term effects of cold environment on muscle metabolism are persistent at older stages and influence pork quality.

## Objectives

- To identify **effects of cold** environment on pig **muscles metabolism** and **meat quality**
- To determine the **reversibility** of these effects after growing-finishing period at thermoneutrality



## Methods



- Samples of LM, AD, SM, GS muscles
- Glycolytic potential (GP), ultimate pH (pHu), IMF, drip, L\*a\*b\*
- Sensory analysis on raw and cooked meat

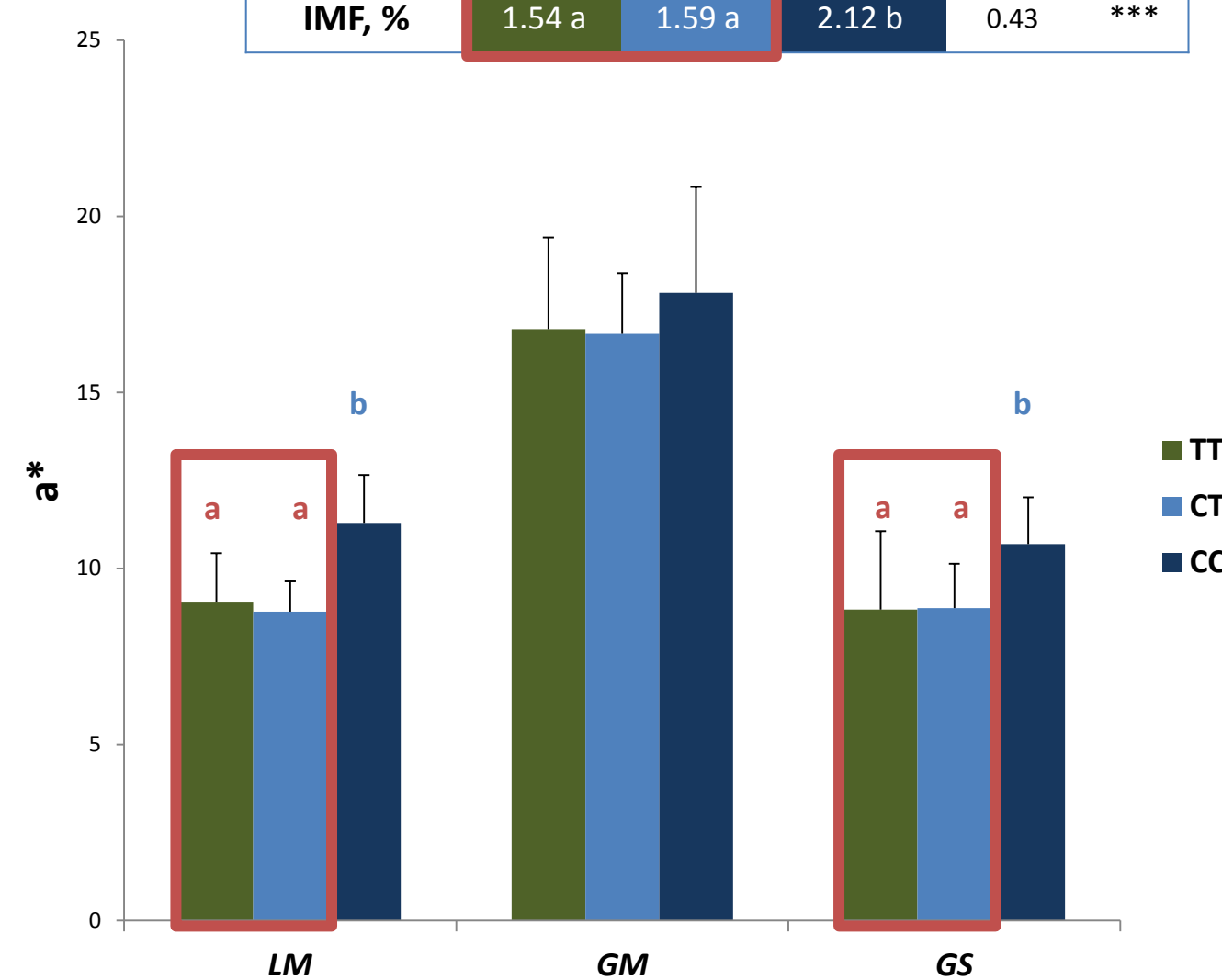
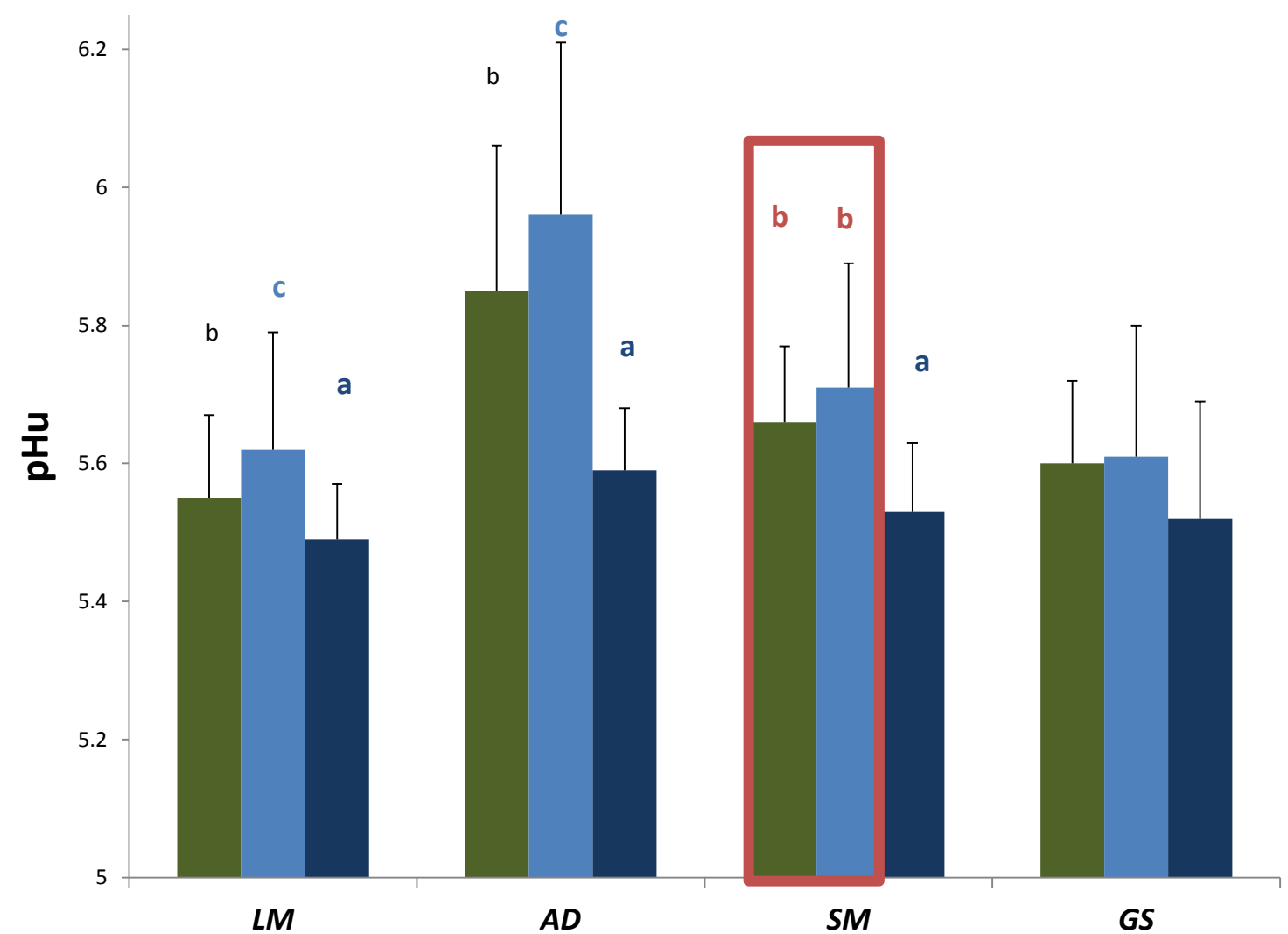
## Results

Reversibility of cold effects: CT ≈ TT

Effect of cold environment during PW and GF period: CC ≠ TT or CT

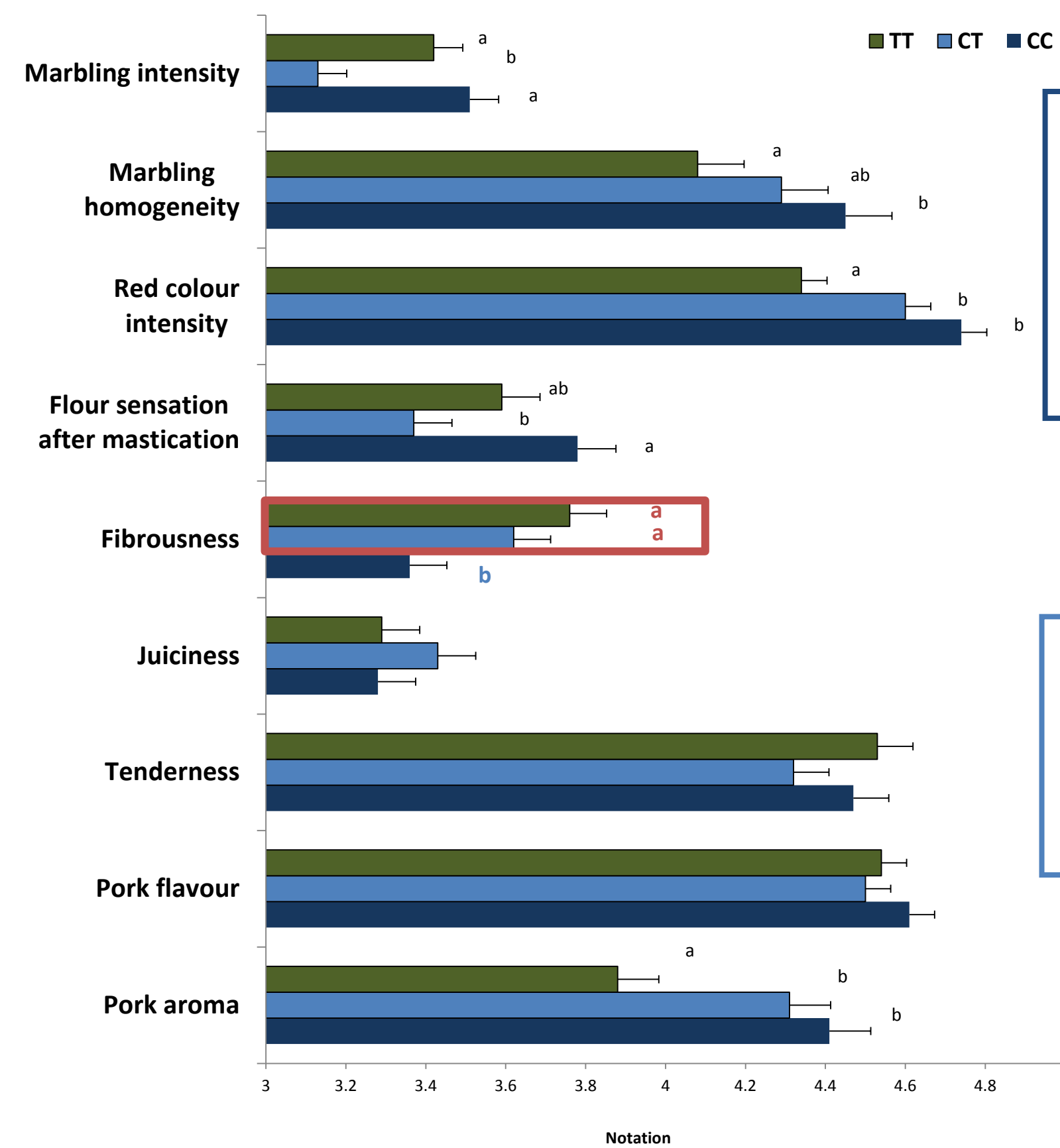
Effect of early cold environment during PW: CT ≠ TT or CT

### Loin and ham muscles metabolism and technological quality



LM	TT	CT	CC	RSD	P-values
Drip loss, %	3.4 a	3.2 a	4.5 b	1.3	*
GP, μmol/g	150 b	135 a	184 c	16	***
IMF, %	1.54 a	1.59 a	2.12 b	0.43	***

### Loin sensorial quality



↗ GP → ↘ pHu  
↗ drip  
↗ IMF, redness  
↘ fibrousness

+ sensorial  
- technological

↘ GP → ↗ pHu  
≈ drip, IMF, a\*  
↘ flour sensation

+ technological  
+/- sensorial

## Conclusions

- Contrasted effects** of cold environment in LM and ham muscles on sensorial and technological meat quality parameters
- Early cold rearing conditions** influence and can explain some meat quality variations

## References

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