Effect of slaughter weight and beef cut on the tenderness of 'Cachena' meat

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INTRODUCTION

The information circulating in the media pursues a reduction in meat consumption, however this objective is not achieved. Meat eaten in moderation provides protein of high biological value, containing all essential amino acids in adequate proportions.

When buying meat, the consumer usually considers three attributes: appearance, colour and presumed tenderness considering the meat cut. After purchase, the most important attribute for meat consumption is tenderness.

Cachena is a cattle breed, part of the Portuguese genetic heritage, with high interest for the south Alentejo region due to the high rusticity of these animals. Animals are small and the meat is known by its excellent characteristics of texture and flavour.

OBJECTIVES

The aim of this study was to assess the effect of slaughter weight and beef cut on 'Cachena' meat tenderness.

MATERIAL AND METHODS

Beef cut
- *Longissimus dorsi* muscle (LD)
- *Psoas major* muscle (PM)
Storage conditions: 2ºC and analysis 72h after slaughter

Slaughter weight
- Group 1: 16 Light animals (live weights: 142-225kg)
- Group 2: 16 Heavy animals (live weights: 272-335kg)

Texture analysis
- Texture Profile Analysis (TPA)
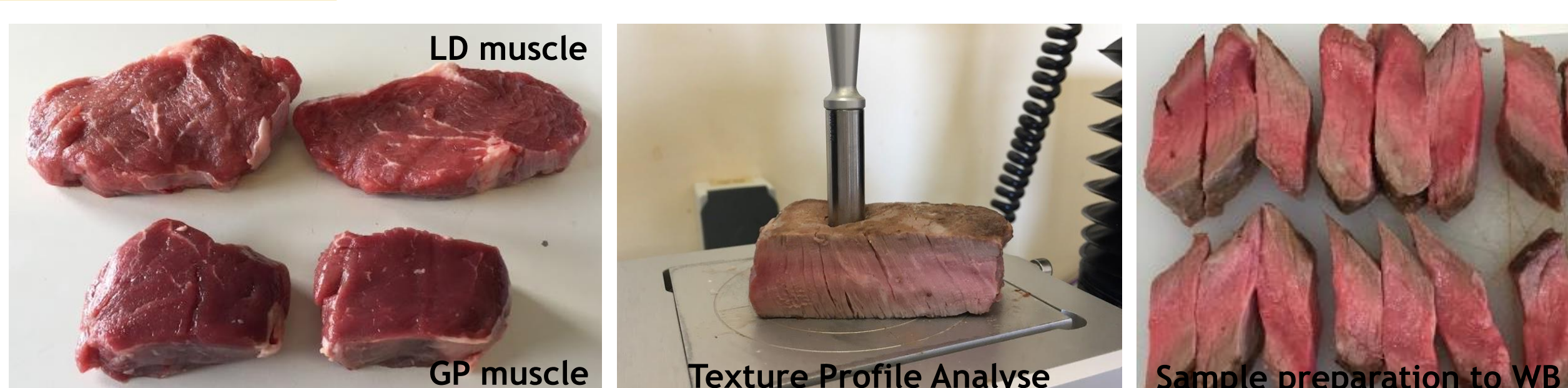- Warner-Bratzler shear force (WB)

Sensory evaluation
Trained panel of tasters — Quantitative descriptive analysis of LD muscle

Statistical analysis
Statistica v.12 software — ANOVA and Tukey's HSD test (P<0.05)

LD muscle / GP muscle / Texture Profile Analyse / Sample preparation to WB

RESULTS AND DISCUSSION

Texture analysis:

Influence of slaughter weight on texture parameters (p < 0.05)

	Hardness (N)	Chewiness (J)	Shear Force (N)
Light	11.12	4.21	31.29
Heavy	15.17	5.62	23.46

The meat of light animals is more tender and chewable than meat of heavy animals. However the shear force is higher, which may be related to the higher fat content of heavy animals.

Influence of beef cut on texture parameters (p < 0.05)

	Hardness (N)	Chewiness (J)	Shear Force (N)
LD	15.70	5.95	27.82
GP	10.92	3.99	25.58

Regarding beef cuts, LD is harder than GP. The same was observed for chewiness, with more energy needed to chew LD compared to GP cut. These results agree with those from WB, because it is necessary to apply greater shear forces to LD than to GP cut.

Sensory evaluation:

In general the tasters consider the meat, regardless to LD beef cut, tender (7.5 is optimal value of tenderness).

The tasters consider the meat of heavy animals more tender (p<0.05), which agrees with WB results.

Sensory evaluation for LD cut (p < 0.05)

Hardness (N): Light 8.07, Heavy 7.62
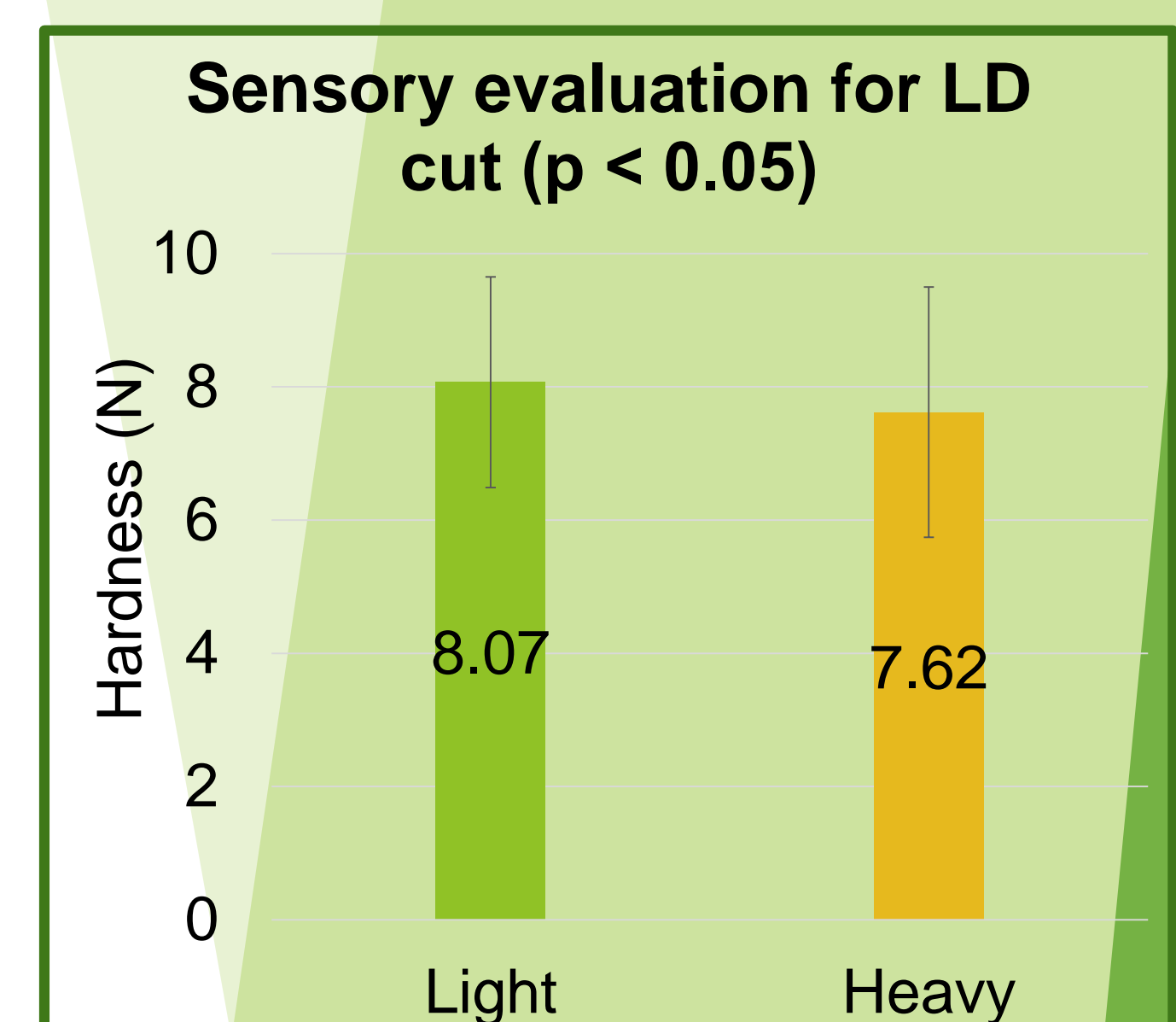
CONCLUSIONS

Slaughter weight and meat cut influence meat tenderness:

- Light animals tend to have more tender and easy to chew meats (results for TPA), however the strength required for fiber cutting is superior (results for WB).

- GP cut presents more tender meat, with less resistant fibers and need of less chewability when compared to LD.

Sensory evaluation is better correlated with the meat's WB than TPA.

Further studies are being undertaken considering higher slaughter weights and less noble beef cuts in order to obtain better profits.
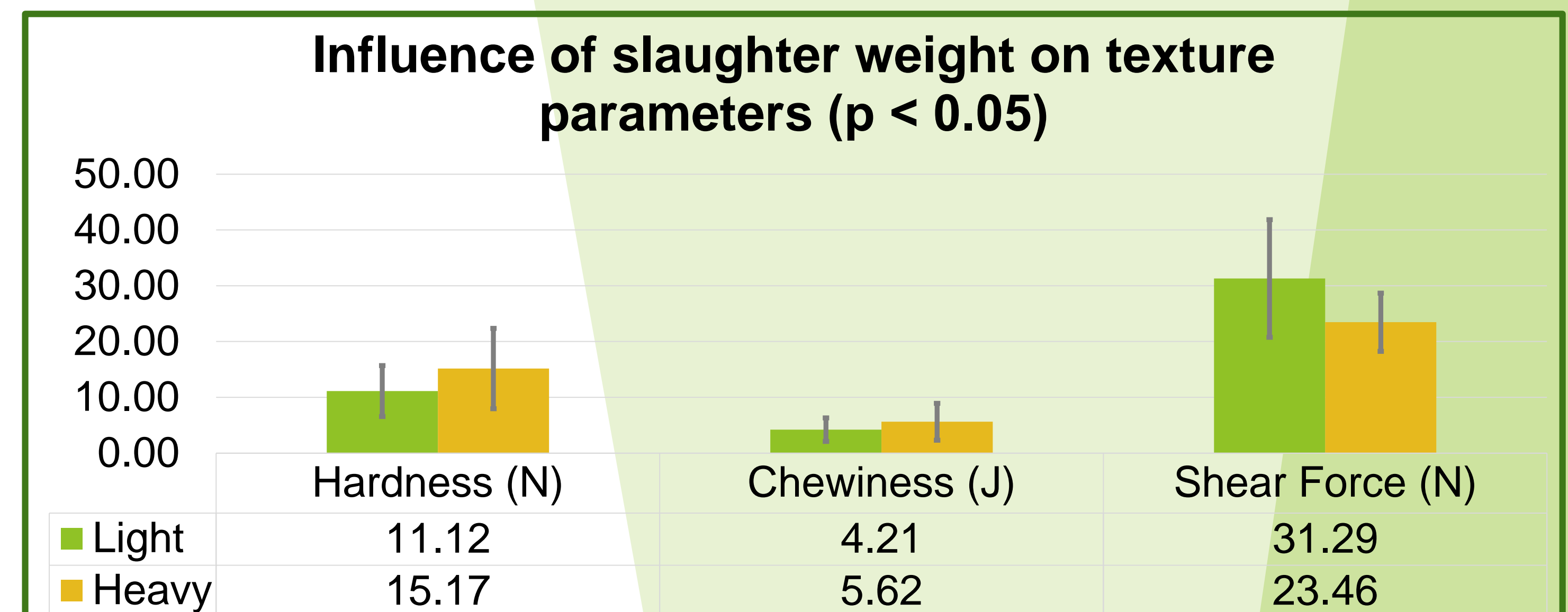
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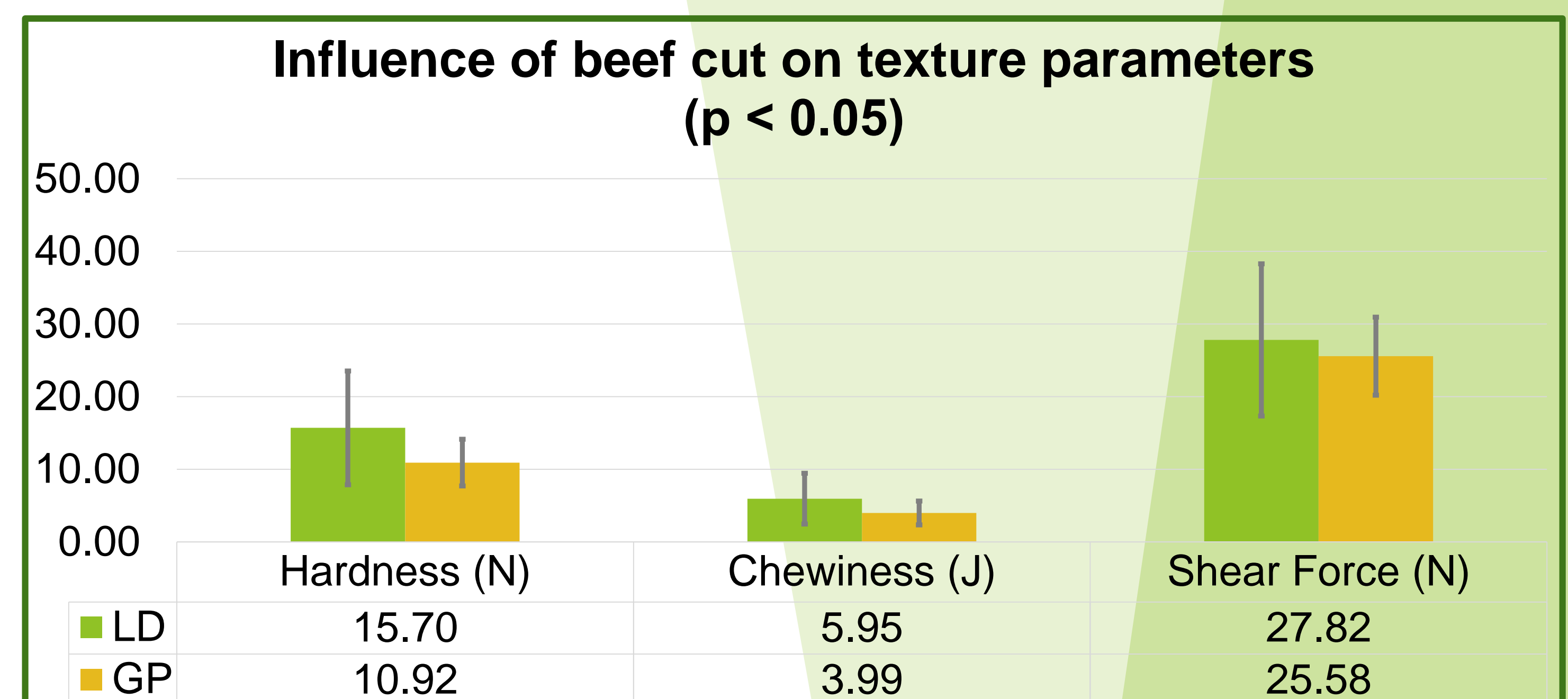
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