

EFFECT OF LONG AGEING TIME ON BEEF QUALITY OF ABERDEEN ANGUS

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INTRODUCTION

At the beginning of 2013, the number of beef cattle was 50,977, whereas Aberdeen Angus was the second largest (25%) breed.

OBJECTIVE

The structure of beef meat is generally tough, so it must be allowed to age between slaughter and cooking. Wet ageing of beef is relatively uncommon in Estonia. The aim of this work was to study the effect of longer ageing time on the quality of meat of the Aberdeen Angus breed reared in Estonia.

MATERIAL & METHODS

- Six free-range beef bulls, aged 18 to 33 months, were slaughtered.
- Six *m. teres major* (MTM) and three *m. longissimus dorsi* (MLD) muscles were removed and vacuum packed to carry out the 60-day ageing process at -1°C.
- Technological traits analysed at 14, 28, 35 and 60 days, and chemical at 14 days of aging.
- To determine beef texture, an analyser with Warner-Bratzler shear blade was used.

RESULTS

- No differences were found between the moisture, ash and protein contents of the muscles, while IMF content ranged from 0.15 to 2.62% in TM and 0.87 to 1.62% in MLD.
- Decline in pH was observed, whereas electroconductivity, ageing and boiling loss increased during ageing.
- The water binding capacity of both MTM and MLD showed opposite results.

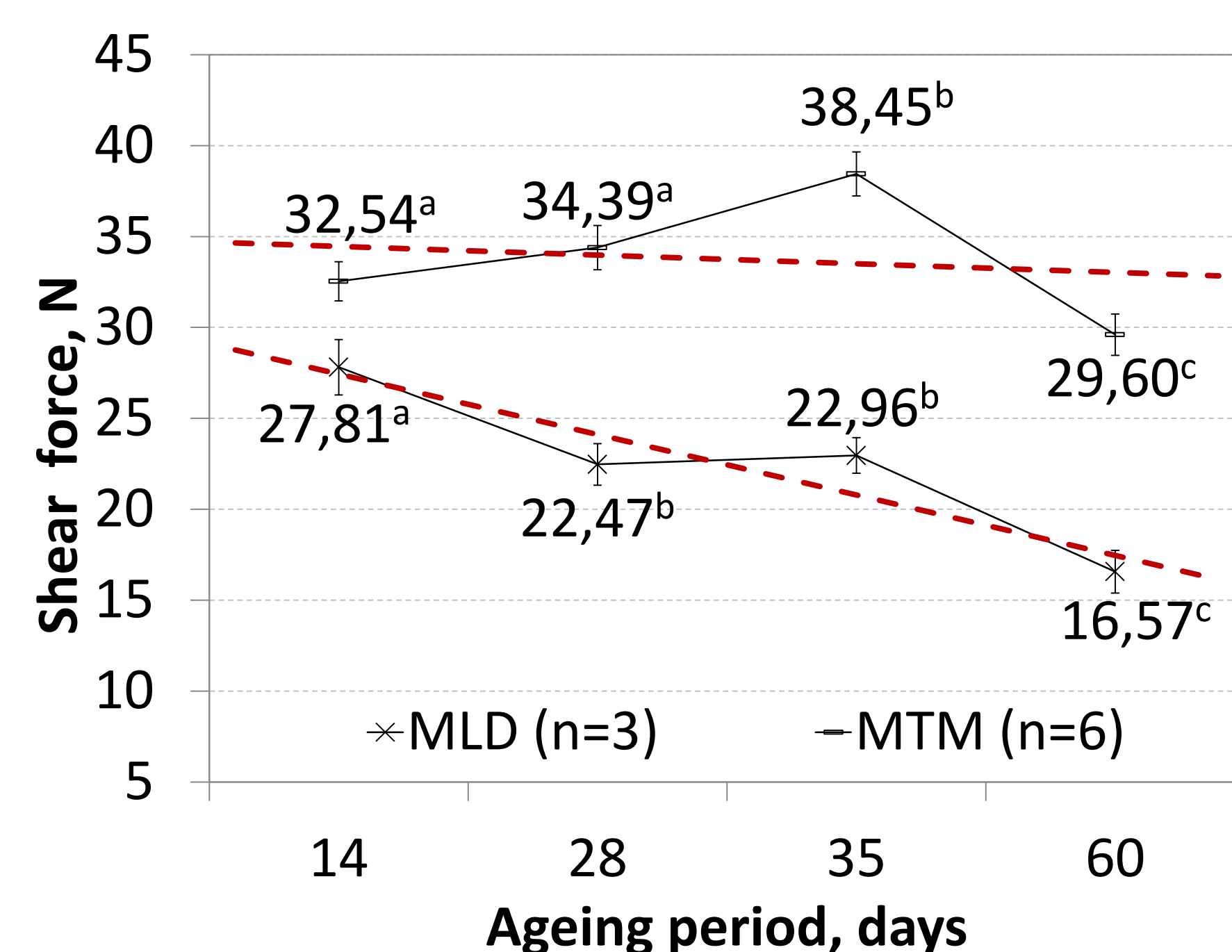
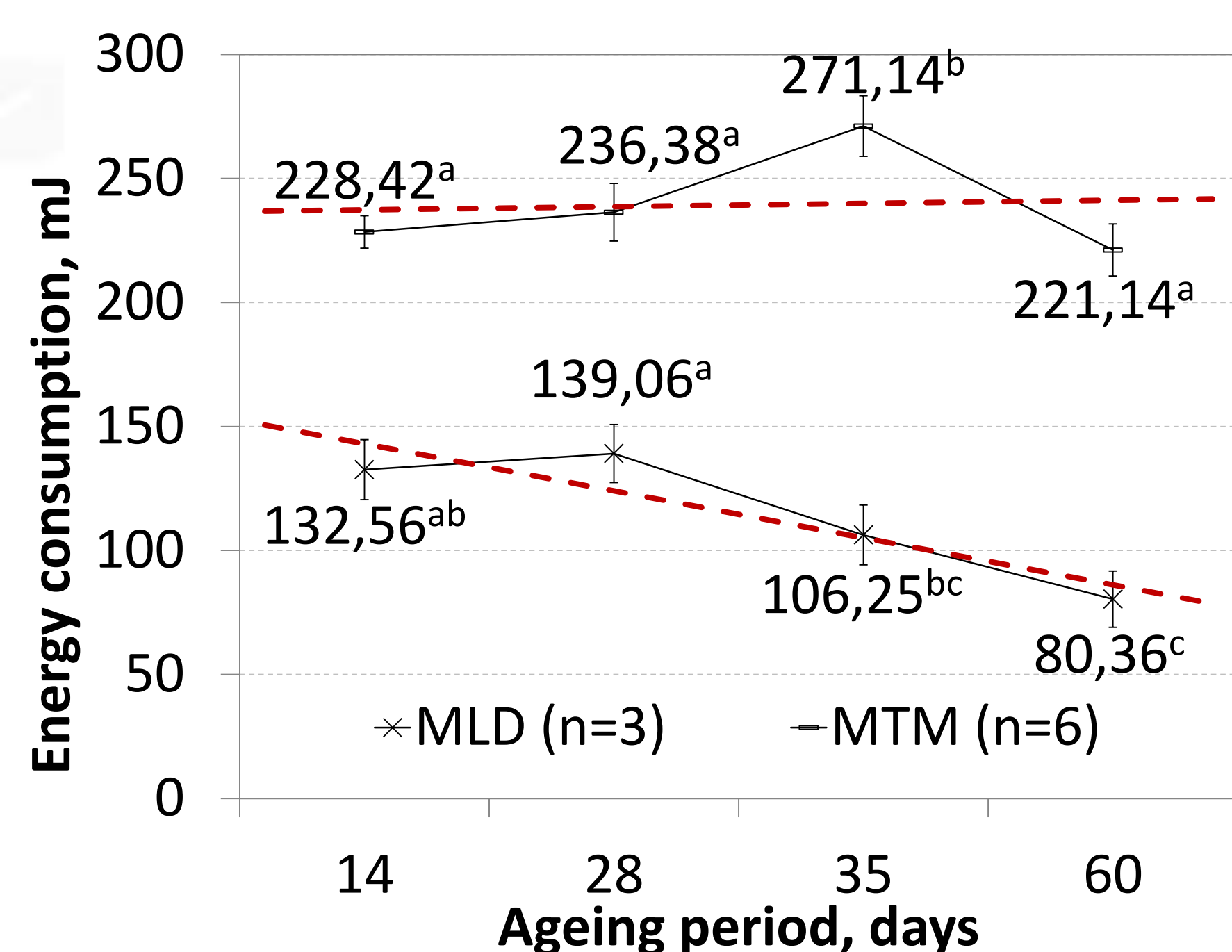


Figure 1. Changes of energy consumption (least squares means \pm standard error) to break muscle fibres during aging

Figure 2. Changes of muscle fibres shear force (least squares means \pm standard error) during aging (n – number of muscles)

M. teres major (MTM)

- The shear force energy until the cutting point of MTM fibres did not change (Fig. 1).
- Highest energy level and shear force at 35 days may be found due to the presence of fascia in the samples.
- Significantly lower shear force (29.6 N) was needed to break fibres at 60 days (Fig. 2).
- No differences were found between 14 and 28 days of ageing, and also the shear force and the energy level did not differ at different days of ageing.

M. longissimus dorsi (MLD)

- The MLD muscle showed a clear trend towards tenderizing during ageing (Fig. 1 & 2).
- The energy consumption value decreased at 35 days, while the shear force was significantly lower already at 28 days compared to 14 days of ageing (27.8 vs. 22.5 N).
- At 60 days, the shear force value decrease continued and was 16.6 N.

CONCLUSIONS

- Ageing did not affect MTM muscle tenderness during 14 to 35 days of storing, and had only a modest effect at 60 days.
- Long ageing time had a significant effect on the tenderness of MLD.
- To select an ageing time, the type of muscle shall be considered.

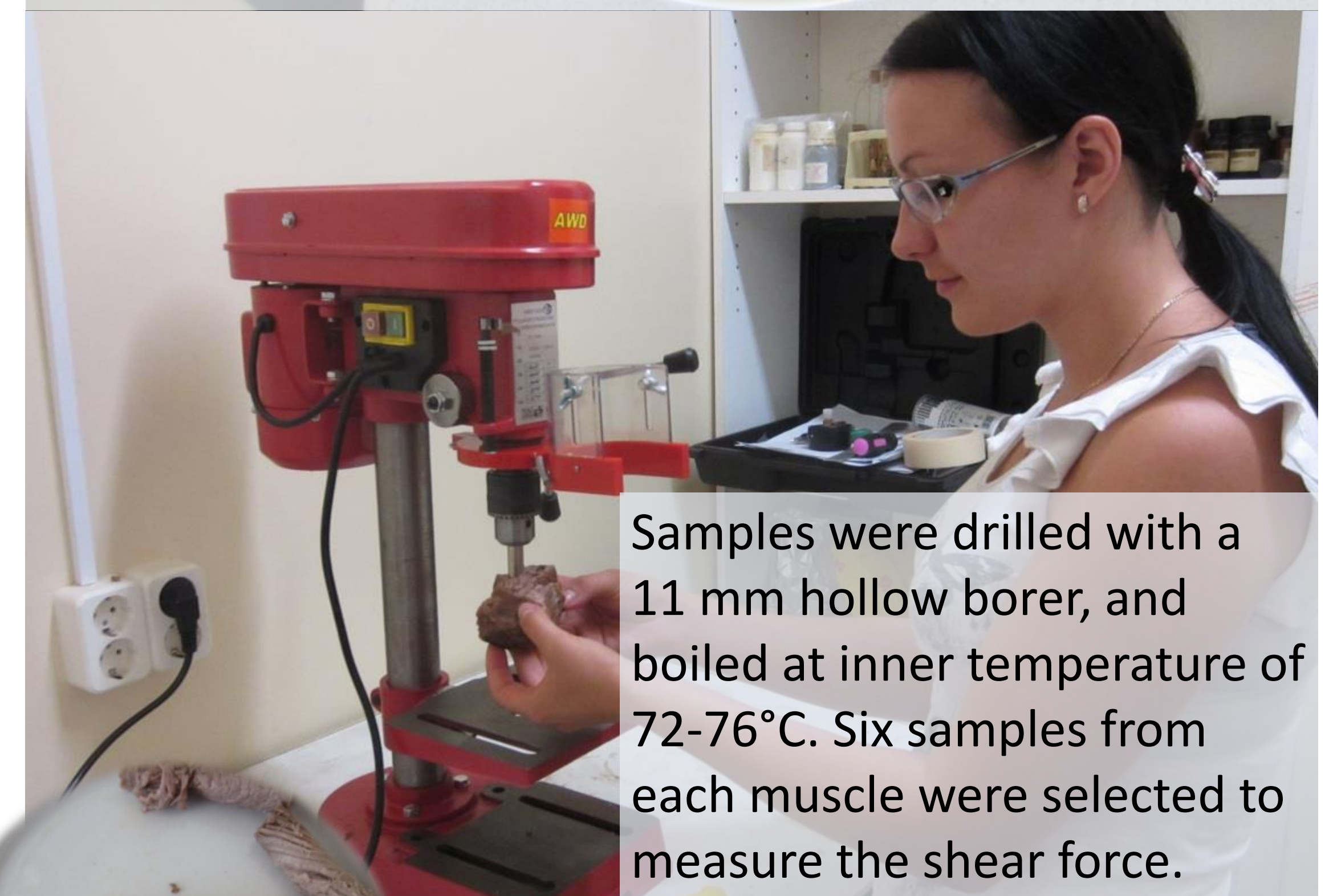
ACKNOWLEDGEMENTS

- We would like to thank MTÜ Liivimaa Lihaveis for collaboration.
- Authors impressed about sophisticated statistical data analysis performed by Dr. Tanel Kaart.
- The study was financed by the Estonian Agricultural Registers and Information Board under project 8-2/T11058VLTD of the Estonian University of Life Sciences.

Breed	No.	%
Hereford	13,090	26
Aberdeen-angus	12,503	25
Limousin	10,691	21
Simmental	4593	9
Other (10)	10,100	19
Total	50,977	100

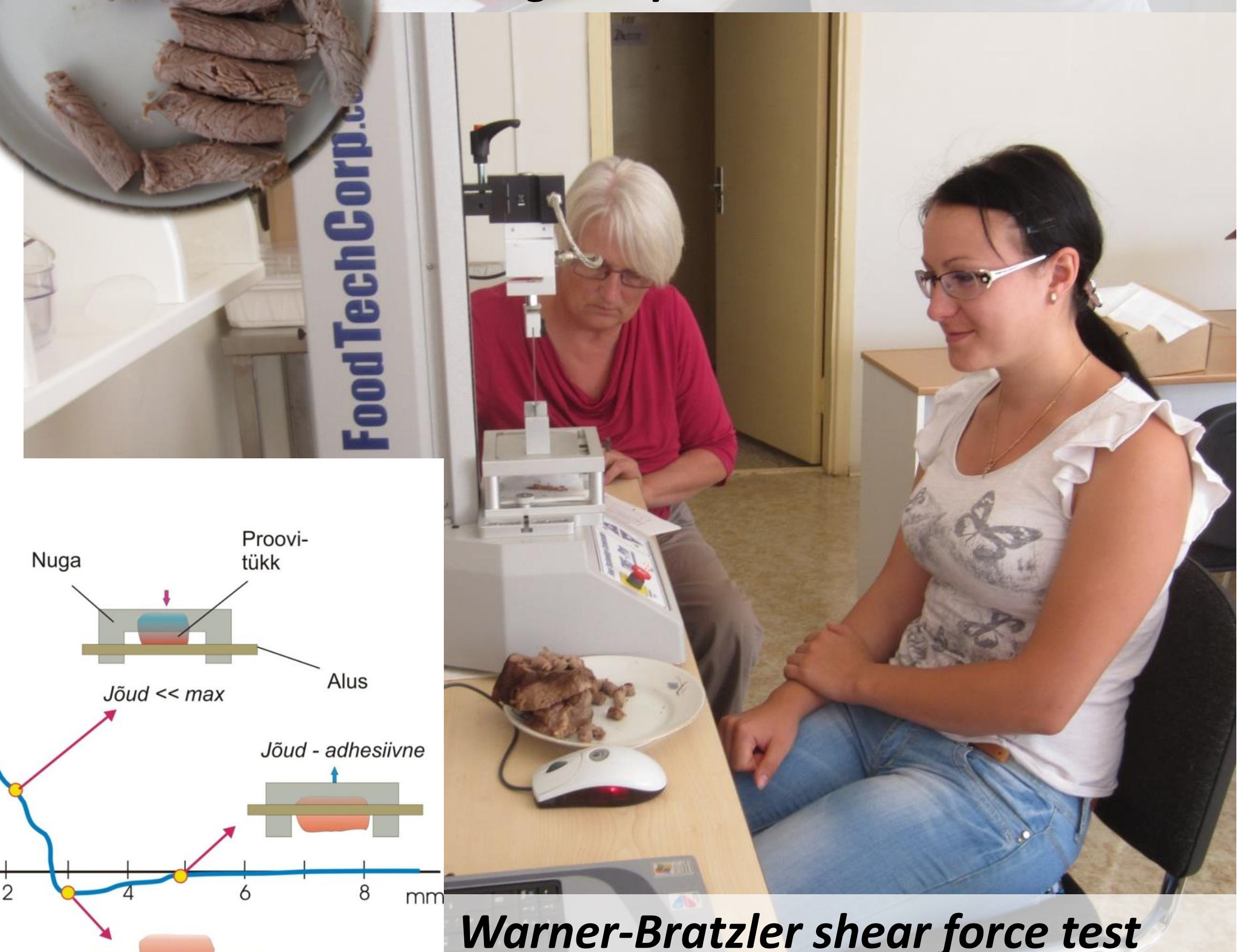


Measuring electroconductivity



Samples were drilled with a 11 mm hollow borer, and boiled at inner temperature of 72-76°C. Six samples from each muscle were selected to measure the shear force.

Drilling samples



Warner-Bratzler shear force test

