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QUALITY OF BEEF FROM DIFFERENT FEMALE CATTLE

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INTRODUCTION

Cattle breeding in Estonia is mainly specialized in milk production and selling of pure-bred cattle. The main aim of cattle breeding is milk production, whereas beef production is a supplementary branch of dairy cattle breeding.

Due to the hard economic conditions the number of cattle and, consequently, the beef production has been decreasing. In 1990 the beef production was 116500 tons, in 1992, 75031 tons. The average live weight of slaughter cattle in 1992 was 370kg and the beef production was 35129 tons (carcass weight), distributed between producing units as follows: large scale farms (collective and state farms) - 28831 tons of 82.1%; individual producers - 6298 tons or 16.8%; and farmers - 372 tons or 1.1%. The female cattle make up about 40% of the total number of slaughter cattle. Therefore the aim of this study was to evaluate the carcass characteristics and the quality of beef from female cattle, in particular from first calf heifers in comparison with heifers and cull cows. The problem of the quality of beef from female cattle, in particular from first calf heifers in comparison with heifers and cull cows. The problem of the quality of beef of first calf heifers was important also in connection with the elaboration of the new cattle classification system.

MATERIAL AND METHODS

The female cattle included in experiments were: heifers (n=39) at the age of 20-23 months, first calf heifers (n=60) at the age up to 36 months and cull cows (n=67) at the age of four to six years. The cattle were slaughtered shortly after their arrival and weighing. The slaughtering was carried out according to the technological instructions valid in slaughterhouses. Meat samples for laboratory analyses were taken from *m.longissimus dorsi* on the level of the 8-10th rib after chilling the carcasses in the refrigerator at 0-4 °C during 48 hours. Meat samples for pH measurements were taken from *m.longissimus dorsi* within an hour after slaughtering (pH_1) and after 48 hours of chilling (pH_{48}). Half carcasses were fully deboned into muscle with fat and bone.

The chemical composition was determined conventionally, the water-binding capacity by the means of press-method. The sensorial properties were determined in samples taken from *m.longissimus dorsi* after 48 hours of chilling.

RESULTS AND DISCUSSION

Data of live weight, carcass weight, dressing percentage and chemical composition of various female cattle are given in Table 1. As shown by the data, the first calf heifers produced heavier carcasses than the heifers (+8kg). The dressing percentage was highest in the group of heifers. The percentage of muscle and fat tissue in carcasses didn't differ significantly. No significant difference was observed in the percentage of bone. The protein content was highest in the beef from the first calf heifers whereas the fat content was highest in that from cull cows. The highest water-binding capacity was determined in the group of heifers. There was no PSE and DFD beef according to pH_1 and pH_{48} values. According to the sensory evaluation of the meat samples from various female cattle, preference was given to the beef from heifers.

CONCLUSIONS

The results showed that the first calf heifers produced carcasses and beef similar to those of the heifers. The differences in carcass characteristics and beef quality were bigger in comparison with the older cows. The results back up the proposal that first calf heifers should be included in the carcass classification system separately from cull cows. Our conclusions are supported by the results of Micol *et al.* (1992).

REFERENCES

MICOL, D., BERGE, D., DOZIAS, D., LEPETIT, J., LIENARD, G., PICARD, B., RENERRE, M., and ROBELIN, J. 1992. Effect of pregnancy and calving on muscle characteristics in cattle. *Proc. 38th ICMST.* 2:93-96.

Table 1. Carcass characteristics, chemical composition and water-binding capacity of beef from various female cattle.

	Heifers	First calf heifers	Cull cows
# of cattle	39	60	67
Age (months)	20-23m	up to 36m	4-6yrs
Average data:			
Live wt, kg	445	477	529
Carcass wt, kg	225	233	258
Dressing, %	50.6	48.8	48.8
Muscle and fat:			
Tissue, %	79.4	79.2	79.8
Bone, %	20.6	20.8	20.2
Chemical composition:			
Protein, %	20.20	21.30	21.10
Fat, %	4.37	4.11	5.60
Water-binding capacity, %	54.7	52.4	51.9