

MINERAL CONTENTS IN MEAT OF ANGUS, SIMMENTAL, CHAROLAIS AND LIMOUSIN BEEF CATTLE

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Today, mineral deficiencies in human are common world-wide and there are evidences which suggest that deficiencies may play a negative role in children's development, pregnancy and elderly health. Consumption of beef can be a good way to respond qualitatively and quantitatively to the mineral requirements of human nutrition (Cabrera et al., 2010). Red meat is a major source of minerals for the human diet, and provides the essential minerals, of high bioavailability, to human nutrition (Norhr et al., 2007; Olaoye, 2011). The aim of this study – to explore and compare the different beef cattle breed longest back muscle mineral content.

The research of mineral content characteristics of various breeds beef cattle was carried out at National Food and Veterinary Risk assessment Institute. The samples for analysis were taken from: angus (AN-12 samples), simmental (SI-10 samples), charolais (CH-12 samples), and Limousin (LI-10 samples) beef cattle carcasses. Beef cattle were held at the „Šilut breeding station“ under standard feeding and keeping conditions.

Samples were digested using ETHOS 900 microwave digestion system. The sample digestion procedure was performed according to the NF EN 13805 standard “Foodstuffs – Determination of trace elements – Pressure digestion. ICP-MS measurements were performed using ICP Mass Spectrometer ELAN DRC-e (Perkin Elmer Sciex).

The data was analyzed by using statistical R pack statistical package and the Excel program for identifying signs of arithmetic averages and it's the errors of standard deviation, variation coefficients.

Data of the study are given in the table and represent the difference of mineral content among different beef cattle breeds in the table.

Minerals mg/kg:	Beef cattle breeds			
	AN	SI	ŠA	LI
1	2	3	4	5
Na	463.126± 18.488	516.259± 24.900	495.473± 21.315	490.886± 18.293
Mg	274.484± 5.893	290.085± 5.414	293.980± 6.491***	242.239± 4.972***
Ca	57.802± 1.030	58.921± 1.859	58.271± 0.931	44.908± 1.396
Zn	30.841± 1.483	33.696± 1.200	31.679± 2.140	25.738± 0.493

1	2	3	4	5
Se	0.056±0.012	0.049±0.003	0.049±0.002	0.050±0.003
Cu	0.640± 0.039	0.690± 0.039	0.748± 0.055*	0.454± 0.016*
Ni	0.221±0.035	0.234±0.041	0.245±0.031	0.203±0.044
Fe	18.551± 0.998	20.047± 2.001	19.274± 1.418	18.040± 0.586
Ba	0.042± 0.007	0.034± 0.007	0.044± 0.004*	0.024± 0.003*

* – p<0.05; ** – p<0.01; *** – p<0.001;

Comparing the amount of different essential minerals in the longest back muscle, the highest amount of Na were in SI meat, at least in AN breed meat, the difference was 10.29 percent. The amount of Na in CH and LI meat were similar, the difference was 0.93 percent. Variation coefficients of this mineral were very wide, the differences were not significant. CH had more Mg than that of LI breed meat, the difference was 17.6 percent (P<0.01). LI breed had more Ca and Zn content than SI significantly, the difference was even 23.78 percent and 23.62 percent, but the differences were not significant. Se content among the analyzed groups of beef cattle significant differences were not found. The content of Se in SI, CH and LI meat were identical and compare with the AN meat, the difference was 12.5 percent. The highest amount of minerals Cu and Ba were in CH beef cattle meat and least in LI, the difference were 39.3 percent (P<0.05) and 45.45 percent (P<0.05). The content of Ni highest amount were in CH, at least in SI, the difference was 4.49 percent. The one of the main essential mineral Fe highest amount were in SI beef cattle, at least in LI, the difference was 10.01 percent, the difference were not statistically significant.

REFERENCES

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