

Meat production and enzyme activities in the blood of fattening young bulls originated from cows with different levels of milk production

MAKAVEEV, Ts.

Department of Genetics, Institute of Animal Breeding, Sofia - Kostinbrod 2232, Bulgaria.

Some authors found differences of meat production and fattening ability between the young bulls originated from cows of dairy type in comparison with bulls belonged to mothers of Meat-Milk type of the dual purpose cattle breeds. There is also evidence that the activity of some enzymes in the blood plasma of animals belonged to beef cattle breeds is higher than in the blood plasma of dairy cattle breeds (Rostovcev et al., 1971; Guskiewicz et al., 1971; Smirnov, 1974). We found higher activity of Creatinphosphokinase and Phosphohexose isomerase in blood plasma of cows from Bulgarian brown breed (dual purpose cattle) than, in the plasma of Holstein - Friesian cows (dairy type) (Makaveev, 1980). Lanina (1973) also found higher albumin contents and GPT activity in blood plasma of cows belonged to dual purpose cattle breeds in comparison with cows of dairy cattle breeds. By Rowlands (1980) additional studies of relationships between blood composition and growth are needed to provide a better understanding observed correlations.

In order to obtain some information about the effect of productive type of mothers on the fattening ability of their sons and some changes of the enzyme activities in their blood we have planned this study.

MATERIAL AND METHODS. The study involved 14 young bulls originated from cows with 5511 kg milk yield per year and 3,53 % fat percent in milk (Dairy type) compared with another group of 14 young bulls originated from cows with 3614 kg milk yield per year and 3,65 % fat percent (Meat-Milk type). The bulls belonged to Bulgarian brown cattle breed. Object of this study were daily gain and dressing percentage of the fattening young bulls of the two groups. Besides we have studied the level of the activities of enzymes: Alaninaminotransferase (ALT), Aspartataminotransferase (AST), Phosphohexose isomerase (PHI), Creatinphosphokinase (CPK), Amylase (Am), Alkaline phosphatase (Akp), Ceruloplasmin (Cp) in blood plasma and 6-phosphogluconate dehydrogenase (6-PGD) in the blood of bulls. The enzymatic methods for determination of the enzyme activities in the blood of animal studied used in this work were described in other papers published (Makaveev, 1982).

RESULTS AND DISCUSSION

Statistically significant differences only between fattening ability of the two group young bulls were established (table 1). The bulls originated from mothers of Meat-Milk type with lower milk production have had higher grow rate and realised 1100 g daily gain

and 60 % dressing percentage in comparison with the control group, originated from mothers with higher milk production (Dairy type). The fattening bulls of the control group realised 1068 g daily gain and 58,4 % dressing percentage. The activity of most of the enzymes studied was higher in the blood plasma of the bulls originated from mothers of Meat-Milk type excepting the activity of PHI enzyme but the differences were not statistically significant.

REFERENCES

- Guskiewicz A., J. Dembowski, 1971, *Genetica Polonica*, 12, 4.
 Lanina A.V. 1973. *Beef Cattle, Kolos* (In Russian).
 Makaveev Ts. 1980. On the genetic variability of blood serum enzymes in farm animals, Sofia, Thesis.
 Makaveev Ts. 1982. *Genetics and Plant Breeding*, 15, 2.
 Rostovcev N.F., I.N. Cherkashenko, O.K. Smirnov. 1971. *Sci. Reports of USSR Acad. Agr. Sci.*, 3.
 Smirnov O. 1974. *Early prediction animal production*, (In Russian).
 Rowlands G.J. 1980. *Journal Agricultural Sciences*, 94, 95-104.

Table 1

Indices	I group Dairy type n = 14					II group Meat - Milk type n = 14				
	\bar{x}	\pm	S \bar{x}	S	C %	\bar{x}	\pm	S \bar{x}	S	C %
Milk of mothers kg	5511	\pm 69,90	261,6	4,75		3614	\pm 77,4	289,54	8,01	
Fat percent	3,53	\pm 0,04	0,15	4,36		3,65	\pm 0,03	0,11	3,01	
Daily gain g	1068	\pm 0,03	0,09	8,93		1100 ^{xxx}	\pm 0,02	0,09	8,57	
Dressing percentage %	58,41	\pm 0,41	1,54	2,64		60 ^x	\pm 0,58	2,16	3,60	
ALT mU / ml	35,78	\pm 1,52	5,71	15,95		36,57	\pm 2,59	9,69	26,51	
AST mU / ml	82,07	\pm 3,47	12,97	15,80		85,86	\pm 2,82	10,54	12,28	
PHI μ M / h / l	4,05	\pm 0,13	0,47	11,59		3,88	\pm 0,10	0,38	9,68	
CPK mU / ml	91,94	\pm 8,30	31,05	33,77		94,33	\pm 6,68	25,00	26,50	
Am U / 100 ml	19,40	\pm 1,90	7,11	36,63		24,79	\pm 2,64	9,88	39,85	
Akp mU / ml	43,57	\pm 2,62	9,81	22,52		50,07	\pm 4,26	15,93	31,82	
Cp mg %	17,24	\pm 0,67	2,50	14,51		18,68	\pm 0,49	1,84	9,85	
6-PGD U / g Hb	0,525	\pm 0,07	0,28	54,10		0,564	\pm 0,03	0,13	22,34	