THE INFLUENCE OF DIFFERENT FORMS BREED TECHNOLOGY OF CATTLE ON SELECTED PARAMETERS OF BLOOD

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Introduction

The right technology of breeding animals is next to feeding, curring, etc., the more important factor to keep the optimal conditions of animals. From this aspect is the most important the nearest surrounding, which unblocked and influenced animals, especialy theirs metabolism.

Matherial and method

In this experiment was implyed two stocks, respectively ekologic stock in Svojše (Stock A) and conventional stock in Čejkovy (Stock B).

Table nr. 1: The caracteristic of the stocks:

Parameter	Stock A	Stock B
Location	Svojše	Čejkovy
Altitude	750 - 1070 metres	500 - 600 metres
Character	ecological	conventional
Races	Czech spotted, limousine, hereford	Czech spotted
Breeding	with bull all year	insemination all year
Stabling	outdoor all year	Free in cowshed
Feeding	pasture + garnishing	volume + cernel + mineral additives
Average efficiency		16, 5 litres of milk
Heath	verry good	verry good

Of both stocks was realised in two years four blood taking. Blood taking was provided in morning timepiece from *vena jugularis* with one-shot needle into test-tube with heparin. In **stock A** was abstractioned 45 and in **stock B** 36 blood samples. The blood serum was obtained in centrifuge during 10 min at 1500 RPM. In this experiment was measured these parameters of blood serum of clinically health cattle: alkaline phosphatase (ALP), glutamyltransferase (GMT), total protein (TP), haemoglobin (Hb), phosphorus (P), calcium (Ca), magnesium (Mg), zinc (Zn), iodine (I_2), triiodthyronin (T_3) and thyroxin (T_4). For determination activity of ALP, GMT [$\mu kat.l^{-1}$], and for determination volume of

TP [$g.l^{-1}$], Hb [$g.l^{-1}$], P [$mmol.l^{-1}$], Ca [$mmol.l^{-1}$], Mg [$mmol.l^{-1}$] and I_2 [$\mu mol.l^{-1}$] in blood plasm, was used Bio-la-tests by Lachema Brno a spectrophotometer Specol (Carl Zeiss, Jena). The Zn [$\mu mol.l^{-1}$] was measured on AAS and T_3 [$nmol.l^{-1}$] a T_4 [$nmol.l^{-1}$] was measured on gamagraph setting on ^{125}I.

All blood samples was statisticlly evaluated with Student's *t*-test ($P_x < 0,05$ a 0,01). Data was presented as means, standart deviations and extrem numbers.

Results

Table nr. 2 – The selected biochemicals parametres of blood:

Index	**Stock A**				**stock B**				P_x
	mean	max	min	s_x	mean	max	min	s_x	
ALP	2,23	6,82	0,63	1,55	1,52	3,75	0,31	0,83	0,05
GMT	0,43	0,97	0,14	0,2	0,41	0,64	0,1	0,13	-
TP	72,29	87,9	51,2	9,17	71,8	99	59	8,49	-
Hb	133,24	159,4	94,1	13,11	118,69	143,7	93,9	11,22	0,01
P	1,74	2,97	0,1	0,75	2,14	2,93	1,32	0,38	0,01
Ca	2,04	2,38	1,22	0,24	2,11	3	1,55	0,27	-
Mg	1,03	1,53	0,57	0,2	1,41	2,28	0,87	0,43	0,01
Zn	13,41	50,2	6,02	0,7	9,08	24	3,3	0,33	0,01
I_2	0,84	5,78	0,11	117,2	1,24	5,33	0,31	90,15	-
T_3	2,35	4,06	1,27	0,64	2,56	3,86	1,3	0,58	-
T_4	56,76	128	26,6	25,89	44,38	90,1	25,1	15,22	0,05

* max – maximum; min – minimum; s_x – standard deviation; P_x – statistic evaluation

Results from table nr. 1 demonstrated, that higher activity of ALP was in stock A, and here was significant statistic differences ($P < 0,05$) between stock A and B. Higher activity of GMT and volume of TP was in stock A. Both parametres presented significant statistic differences. The volume of Hb in stock A was higher in stock A and search significant statistic difference ($P < 0,01$). Volume of P and Mg was higher in stock B and here was fouded significant statistic differences ($P < 0,01$). Quantity of Ca was so higher in stock B. Here was no significant statistic difference. Higher volume of Zn was measured in stock A, and here was founded significant statistic difference ($P < 0,01$). Volumes of I_2 a T_3 was higher in stock B, but here wasno significant statistic difference. The higher volume of T_4 was measured in stock A, and here was fouded significant statistic difference ($P < 0,05$).

Discussion

In the stock A was measured two-times higher activity of ALP, than informative levels by Vrzgula *et al*. (1990), Toth *et al.* (1990), Jurajdová *and* Trcala (1990), Sova *et al.* (1990), SLANINA *et al.* (1992), REECE (1998) a JELÍNEK *et al.* (2003). Only by Ulrich (2000), was measured activity ALP in blood plasm is in interval of informative levels for this categorie of

cattle. It can be caused because in group is pregnant and animals and animals in lactation, that higher level of ALP is by (Masopust 1998, Ulrich 2000) normal. Higher level of I_2 was measured too. It can be caused with higher suplementation in diet. The other parametres declarated normal activities and volumes for cattle.

In the stock B was fouded this divergentions from informative levels by Vrzgula *et al.* (1990), Toth *et al.* (1990), Jurajdová *and* Trcala (1990), Sova *et al.* (1990), Slanina *et al.* (1992), Reece (1998), Ulrich (2000) and Jelínk *et al.* (2003). Higher level was measured of Mg, I_2 a T_3, it can be caused with higher metabolic activity and with mineral additives.

Averadge numbers of both stocks was statistically processed and was fouded this significant statistic differences. In the stock A compared to stock B was founded significant statistic differences ($P < 0,01$) by the Hb, it can be caused with higher altitude, and significant statistic difference ($P < 0,05$) in activity of ALP and T_4, it can be caused with more intensive locomotive activity of animals in ecological stock, where are animals all year on pasture. The next significant statistic difference ($P < 0,05$) was fouded by the Zn in blood plasm, it can also be caused with locomotive activity or with geological underlay or because in stock A is not market production of milk, and Zn is secreted into milk by Illek *et al.* (2000) it is 3 – 5 $mg.l^{-1}$.

In the stock B compared to stock A was inquest significant statistic differences ($P < 0,01$) of P and Mg, it can be caused with mineral additives that saturated blood plasm of animals with this elements.

Other parameters have not significant statistic difference.

Conclusion

In the ecological stock was measured higher activity of ALP and I_2, and lower volume of Ca in blood plasm.

The conventional stock was founded higher volume of Mg, I_2 and T_3, and lower volume of Zn a T_4.

Between stocks was founded significant statistic differences. In the ecological stock of Hb ($P < 0,01$), ALP ($P < 0,05$), T4 ($P < 0,05$) and Zn ($P < 0,05$). In the conventional of P ($P<0,01$) and Mg ($P < 0,05$).

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