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THE RELATIONSHIPS BETWEEN THE NUTRITION PROTEIN DEFICIENCY IN COWS AND HEALTH DISTURBANCES IN CALVES – TWO CASE STUDIES.

Introduction

Actually there are very popular and common the beef cattle husbandry. This kind of animal production don't require the big economical expenditures, besides the beef cattle are more resistant to worse feeding conditions. Beef cows are not so susceptible to infections like milk ones. On the other hand there is necessary to asses continually the metabolic parameters of animals in this type of husbandry to achieve the right welfare and be sure that feeding parameters are appropriate. In clinical practice, the protein deficiency and it's results are the main and frequent therapeutically problems. One of the main results of protein deficiency in feeding dose of pregnant cows is the low qualify of colostrums and milk, as well as calves protein malnutrition. It comes to week calves origination, that become death after several days, or are specially susceptible to respiratory and alimentary tract disorders.

First case study – syncytial virus contamination.

In the herd contains 160 beef cows limusine breed during the winter comes to solitary calves death. The animals were divided and stay in production groups due to its physiological status. Feeding was based on hay, hay silage and straw with addition of mineral deer-licks. Moreover, the animal were supplemented with self made fodder with addiction of mineral-vitamin premix. The animal were free from parasites. The cows were vaccinated in the last trimester of pregnancy using the Rotavec corona vaccine. The first cases of illness appeared in winter season from December to February. In affected calves becomes to only general weakness, besides were no clinical symptoms. These disturbances concern the calves 2 month old, which were in good condition. During the necropsy there were the signs of pneumonia detected. The primary cause of death was the respiratory insufficient. Some of the cows breed the calves, which become death just after birth despite of treatment.

There were provided the hematological assessment in 3 cows, which calves were death just after labour as well as in 7 calves which not exhibits the clinical signs.

Hematological and biochemical examinations data:

NR	WBC [x 10^9/l]	RBC [x10^{12}/l]	Hb [g/dl]	Ht [%]	N.band. [%]	N.segm [%]	Eosin. [%]	Lymph. [%]	Mon. [%]
CALVES									
1	12,9	9,89	11,8	42,3	1	17	1	81 10450	
2	6,9	10,85	11,6	41,4	2	25	1	70 4830	2
3	10,05	13,29	11,5	40,4		24		75 7540	1
4	11,01	13,39	14,0	44,4	1	20		77 8480	1
5	11,82	12,87	11,1	37,2		31	1	67 7920	1
6	17,78	9,85	12,5	36,2	1	13	1	85 15110	
7	10,93	10,17	11,4	37,9	1	8		91 9950	
COWS									
8	12,82	7,03	12,8	41,0	1	16	17	66 8461	
9	25,49	6,48	11,0	31,9	1	16	14	69 17588	
10	7,66	7,03	10,8	34,9		26	4	70 5360	
References values	4,0 –10,0	5,0 – 8,0	8 – 14	24 -46	do 2	15 - 45	2 - 20	45 -72	2 - 7

Nr	AST [U/l]	Amylase [U/l]	Protein [g/l]	Albumins [g/l]	Globulins [g/l]	Creatinine [mg/dl]	P inorg. [mg/dl]	Glucose [mg/dl]
CALVES								
1	58	22	57,8	38,15	19,65	1,42	9,56	190,6
2	72	24	54,2	33,95	20,25	2,52	8,55	157,6
3	52	22	66,4	37,18	29,22	1,24	7,68	141,8
4	89	28	59,7	39,45	20,25	1,90	7,9	146,5
5	62	18	64,3	35,18	29,12	1,95	8,15	123,7
6	79	27	66,2	41,63	24,57	1,92	9,66	145,2
7	55	31	59,6	36,76	22,84	1,15	7,97	114,3
COWS								
8	63	27	79,2	40,31	38,89	1,81	5,31	87,1
9	82	39	73,2	38,65	34,55	1,65	4,46	85,1
10	84	24	82,3	42,42	39,88	1,64	3,92	66,5
References values	30-100	27 - 107	55-70	27 – 39 32 - 49	28 - 88	1,0 – 2,1	4 – 9,5	40 - 80

Nr	CPK [U/l]	AP [U/l]	K [mmol/l]	Ca^{++} [mmol/l]	Ca total [mg/dl]	Albumins/ Globulins ratio	Urea [mg/dl]	Total bilirubin [mg/dl]	Cholest [mg/dl]
CALVES									
1	128	676	6,1	1,50	11,43	1,94	16,8	0,27	135
2	53	449	6,3	1,40	11,23	1,68	14,6	0,15	253
3	125	354	5,7	1,52	11,62	1,27	11,6	0,10	171
4	199	491	6,1	1,52	11,78	1,95	19,5	0,13	220
5	185	542	5,6	1,45	11,10	1,21	19,5	0,12	169
6	661	288	6,0	1,48	11,51	1,69	23,0	0,09	264
7	202	321	5,3	1,37	10,21	1,61	14,0	0,41	184
COWS									
8	88	49	5,7	1,26	9,18	1,04	15,1	0,10	129
9	108	77	4,0	1,48	9,65	1,12	13,5	0,13	210
10	125	58	3,8	1,37	9,90	1,06	13,1	0,13	186
Referen-ces values	56 - 410	27 - 107	3,8-5,1	1,15 – 1,40	9 – 11,5	0,84 – 0,94	15 - 30	0,1 – 0,5	50 – 116 - 120

Immunological examinations data

Nr	BVD (Elisa test)	BRSV (Elisa test)	IBR/IPV (Elisa test)
CALVES			
1	positive	positive	-
2	-	positive	-
3	-	positive	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	positive	-
COWS			
8	-	positive	-
9	-	positive	-
10	-	positive	-

The above mentioned data show the lymphocytosis, low globulins levels in serum, hypercholesterolaemia and low concentration of urea in blood of examined animals. The low concentration of protein and urea in blood indicate on protein deficiency in feed doses. Serological examinations confirmed the BRSV contaminations in affected animals.

Practical solution of the problem

There was recommended vaccination all of calves over 2 weeks using the Rispoval RS + Pi3 intranasal vaccine in dose 2 ml/ animal. Every calves was treated

with 5 ml preparation containing the beta carotene (Carofertin - Medivet) i.m. The feeding doses were supplemented with rich protein preparation – the Saccharomyces cervisiae derivates- Leiber BM in dose 100g/animal/day.

Second case study- Escherichia coli contamination.

In the same herd appeared the diarrhea in calves in first two weeks of life. Despite the intensive treatment these animals fell down with symptoms of cardiac-respiratory insufficiency. The microbiological examinations were done from impressive preparations from organs and gut contents and the intensive growth of E. coli was detected. There were blood samples collected from 3 calves not exhibited the signs of illness and from 5 pregnant cows.

Hematological and biochemical examinations date :

NR	WBC [x 10^9 /l]	RBC [x10^{12} /l]	Hb [g/dl]	Ht [%]	N. band. [%]	N.segm. [%]	Eosin. [%]	Lymp. [%]	Mon. [%]
PREGNANT COWS									
1	14,46	7,45	12,6	40,3	12	53	3	32 4 630	--
2	6,61	7,97	13,8	43,7	2	24	8	64 4 230	2
3	8.6	9,11	15,1	47,1	--	29	11	59 5 070	1
4	7,19	7,41	13,8	42	1	17	5	76 5 460	1
5	8,68	7,12	10,5	34,4	1	25	3	70 6 080	1
CALVES									
1	7,36	7,58	12	35,3	14	44	--	41 3 017	1
2	3,14	9,14	13,8	40,1	16	39	--	38 1 193	7
3	10,31	9,76	13,3	39,9	8	32	--	60 6 186	--
Reference values	4,0 –10,0	5,0 – 8,0	8 – 14	24 -46	do 2	15 - 45	2 - 20	45 -72	2 - 7

Nr	AST [U/l]	Urea [mg/dl]	Protein [g/l]	Albumins [g/l]	Globulins [g/l]	Albumins/ Globulins	Ca [mg/dl]	P inorg. [mg/dl	***Mg*** [mg/dl]
PREGNANT COWS									
1	92,0	32,2	70,3	40,15	30,15	1,33	8,35	9,0	2,7
2	82,0	16,7	74,5	43,13	31,37	1,37	8,99	5,7	2,4
3	68,6	10,5	72,1	46,34	25,76	1,80	8,7	5,5	2,7
4	72,16	23,0	70,3	35,89	34,41	1,04	8,16	9,5	2,6
5	62,3	22,5	59,8	32,19	27,64	1,16	8,52	5,9	2,0
References values	30-100	15- 30	51-71	32 - 49	28 - 88	0,84 – 0,94	9 – 11,5	4 – 9,5	1,8– 3,2

The laboratory findings show hypocalcemia in pregnant cows blood, the high albumins/globulins ratio, low urea concentration and globulins – which may indicates the protein deficiency in fodder dose.

Practical solution of the problem.

The cows in last trimester were administrated with Rotavec Corona (Intervet) vaccine and simultaneously 20 ml Minerasol preparation i.v. Additionally each pregnant cow was administered with immunostimulating preparation Inmodulen in dose 10 ml/ cow, twice every 3 weeks. The fodder dose for pregnant ones were supplemented with 150-200 g protein preparation Interyeast. The calves were administered with injection of immunoglobulins preparation Boviglobin 20 ml per animal and were supplemented with Saccharomyces - derived preparation containing 10% pectin from apple – Interyeast DA-1. This treatment gives the good results in faces consistent (concentration)

Conclusions.

1. The main problem in beef cattle husbandry in first months of their life are the respiratory and alimentary tract disorders.
2. The one of the pivotal factors which promote the illness is the protein deficiency in fodder dose.
3. Pregnant cows vaccinations and protein rich fodder successful protects the animals from disease.
4. The fodder supplements containing the Saccharomyces cervisiae metabolism derivates like Interyeast, Interyest DA-1, Leiber BM and simultaneously vaccinations can successfully protects against the beef breeds calves diseases in breeding period.

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Стаття надійшла до редакції 11.03.2010