

THE CONSIDER OF INFLUENCE OF MICROCLIMATIC CONDITION ON THE NUMBER OF OCCURRENCE OF DIARRHOEA IN CALVES

Petra Kroupová, Miloslav Šoch

*University of South Bohemia in České Budějovice, Faculty of Agriculture, Department of Anatomy and Physiology of Farm Animals, 370 05 České Budějovice, Studentská 13, Czech Republic
Tel.: +420 387 772 618, fax: +420 387 772 621, e-mail: kroupova.pe@seznam.cz*

Key words: calves, the stable microclimate, diarrhoea

Introduction

Animals, what are stabled in stalls, must adapt themselves on all series of changes, which connected with organisation, technology and methods of breeding. It is evident, that animals breeding in these conditions respond very intensive to all imperfections of a stable environment. These inadequacies have a negative influence on health and a genetic acquired production (Novák *et al.*, 1997a, 1997b; Novák *et Kubíček*, 1994). On optimal values of microclimate factors for the breeding of calves are different opinions. In the norm ON 73 4502, which is designed for calves, is a minimal temperature of air 8°C, optimal temperature in the winter 10–14°C (in a pavilion of plant nutrition is it 10–12°C) and the optimal temperature in the summer is 22°C. The optimum of relative moisture is 50 – 70% and the circulation of air 0,25 m.s⁻¹, in the summer is it 0,5 m.s⁻¹ and 1 m.s⁻¹ at temperature 22°C (Čítek *et al.*, 1994).

The great deal of calve's mortality (about 2/3) is caused by deficiencies and mistakes in feeding, breeding and management. Diarrhoea, swell, inflammatory and respiratory disorders are implications of these mistakes (Doležal *et al.*, 1996). Diarrhoeic syndrome (DSd) represents disorders or disturbances of gastrointestinal tract, which are manifested by most frequent excretion, dejection of greater amount of faeces with reduced content of dry matter and increased content of water. The prevalence of diarrhoeic syndrome is high and considerably different from age and season. If the average time of DSd continuation is about 7 days and subsequent convalescence since 3 to 5 days, the calves with mild diarrhoea are coming down from 3 to 4 kg of their weight, due to a middle diarrhoea they lose 7,5 kg and with strong diarrhoea in to 9 kg of live weight, which makes the lag of calves in a group behind healthy ones (Slanina *et al.*, 1991).

Material and methods

In the observed breeding were in the period between March and December 2004 monitored the parameters of stable microclimate (the relative temperature, the degree of cooling, the relative moisture of air, and the circulation of air). To the measurements was used Assman's aspiration psychrometer and Hill's cata-thermometer. Speed of an air circulation and the degree of cooling was calculated. The measuring was running in the weekly intervals always at about the same time of a day. The occurrence of diarrhoea was thoroughly watched in calves till their age of 21 days and registered into the prepared tables. Detected values were reciprocal compared. In this breed stay the calves together with their mothers in a walled stable and the animals are mainly holstein cattle breed.

Results and discussion

In comparing with the norm mentioned above the optimum temperature was detected in high relative moisture of air. Only in December the temperature was higher by 0,04°C in comparing with the minimal temperature. The degree of cooling caused by air circulation was the highest in March, October, November and December, it means, that in the stable was rather cool. The circulation of air was in all months assessed as deficient after more detailed measure were found unventilated places and places with draught.

The highest morbidity of calves was found in the months March, April and August, in which reached to 100%. This value was in individual months caused probably by the overcooling of the calves and also by suitable conditions for propagation of pathogenic agent. In August, on the basis of measured data of microclimate, it is assumed that a major influence had human factor. On the contrary, the lower morbidity (7,69%) was observed in June when the correlated conditions of microclimate were in the range of optimum. The exception is the value of an air circulation, which was rather an insufficient. In other months the morbidity vary from 57,14 to 90%. The table and graph are placing in appendix.

Conclusion

On the basis of ascertained results and assessment of their contexture is possible to enunciate that on the health of calves has the significant influence not only the microclimate of stable but another factors as well, for example staff nursing, hygiene, nutrition, etc. It is necessary to advise all these conditions of breeding in mutual contiguity.

References

1. Čítek, J., Šoch, M.: *Základy odchovu telat. Praha, Institut výchovy a vzdělávání MZe ČR, 1994, 36 s.*
2. Doležal, O., Pytloun, J., Motyčka, J.: *Technologie a technika chovu skotu. Praha, Svaz chovatelů českého strakatého skotu, 1996, 184 s.*
3. Novák, P., Kubíček, K.: *Systém hodnocení vybraných faktorů ovlivňujících pohodu zvířat. Sborník přednášek z odborného semináře s mezinárodní účastí "Ochrana zvířat a welfare". Ústav zoohygieny FVHE VŠVF Brno, 1994, s. 127-132.*
4. Novák, L., Novák, P., Opatřil, M.: *Prostředí stájí jako výrobní faktor finančně ekvivalentní výživě. I - Základní metodické přístupy. Sborník tezí přednášek z mezinárodní konference "Aktuální problémy šlechtění, zdraví, růstu a produkce skotu". ZF JU České Budějovice, 1997a, s. 392-393.*
5. Novák, L., Novák, P., Opatřil, M.: *Prostředí stájí jako výrobní faktor finančně ekvivalentní výživě. II - Využití pro průběžné hodnocení a odhad ekonomické rentability chovu. Sborník tezí a přednášek z mezinárodní konference "Aktuální problémy šlechtění, zdraví, růstu a produkce skotu". ZF JU České Budějovice, 1997b, s. 394-395.*
6. Slanina, L. et al.: *Zdravie a produkcia teliat. Bratislava, Príroda, 1991, 387 s.*

This project was worked with the support of experimental counsel MSM 600 766 58/06, GAČR 523/03/H076 and FRVŠ 3321/05.

Appendix:

Tab. 1.: The survey of measure out values of monitored parameters of stable microclima and the number of occurrence of diarrhoe by calves

Month	The average temperature (°C)	The relative moisture (%)	The degree of cooling (W.m ⁻²)	The value of air circulation (m.s ⁻¹)	Sickly calves (%)
March	12,39	88,33	344,09	0,12	100,00
April	14,13	92,68	300,14	0,1	100,00
May	16,9	85,43	259,53	0,1	78,57
Juni	18,4	82,3	228,97	0,11	7,69
July	20,16	77,79	265,39	0,21	60,00
August	18,4	80,13	270,00	0,18	100,00
September	17,06	82,78	288,42	0,13	70,59
October	15,03	84,55	360,00	0,34	90,00
November	10,91	85,7	335,30	0,13	70,59
December	8,04	88,86	444,13	0,13	57,14

Graph 1.: The running of monitored parameters in individual months

