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Evaluation of Oxidant/Antioxidant status, Metabolic profile and Milk production in Cows with Metritis

The time around calving is challenging for the dairy cow because of significant morphological, metabolic and immunological changes in her body. The prevalence of metritis and endometritis is high in Czech dairy herds, and therefore to implement efficient preventative measures. The aim of the study was to evaluate the oxidant/antioxidant status in 10 cows with metritis and 10 healthy cows in a high-yielding (10,200kg) Holstein herd. The multiparous cows were subjected to clinical and blood chemistry monitoring from 5 to 15 days postpartum. Metritis diagnosis was based on rectal palpation, presence of altered vaginal discharge and increased body temperature (>39.5°C). Between 7 and 15 days postpartum blood samples were taken from the metritic and control cows to measure serum levels of calcium, NEFA, BHB, vitamin A, vitamin E, betacarotene, haptoglobin, activities of AST, GPx, total antioxidant capacity (TAC), and milk samples to measure somatic cell count (SCC). Compared to the healthy cows, the metritic cows showed lower serum levels of calcium (2.13 vs. 2.30 mmol/L), vitamin A (0.52 vs. 1.06 μmol/L, P<0.001), vitamin E (3.72 vs. 5.97 μmol/L, P<0.001), betacarotene (3.58 vs 6.62 μmol/L, P<0.001), blood GPx activity (896 vs. 935 μkat/L) and TAC (0.768 vs. 1,01 mmol/L, P<0.001); and higher levels of serum NEFA (0.90 vs. 0.4 mmol/L), BHB(1.02 vs. 0.72 mmol/L), AST (1.65 vs. 1.5 ukat/L) and haptoglobin (3.30 vs. 0.71 g/L, P<0.001). The metritic cows had significantly lower average daily milk yield (31.7 vs. 49.2 kg, P<0.001) and higher milk SCC (162,000 vs. 103,000 cells/mL). The results indicated impaired metabolism, higher oxidant status, vitamin A, E and betacarotene deficiencies and reduced milk yield in metritic cows.

Key words: dairy cows, metritis, oxidative stress, antioxidants

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Biography:

Josef Illek is Associate professor at University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic. He graduated from the Veterinary faculty Brno in 1969 as MVDr. Since he graduated he was working at University of Veterinary and Pharmaceutical Sciences Brno as Assistant Professor at the Institute of Pathophysiology (1969-1970), Assistant Professor at the Clinic of Ruminant Diseases (1971-1986), Associate Professor at the Clinic of Ruminants Diseases (1987-2009). Since 2010 he has been working as Head of Large Animal Clinical Laboratory. During his work at the clinic he was educating at the clinic. He had 10 succesfully completed leadership of dissertations thesis, and leadership of 10 dissertations thesis that are still in the process along with leadership of 15 completed diploma thesis. His research is focused on a study of metabolic disorders in cattle, small ruminants and development of laboratory diagnostics and clinical biochemistry. He has 95 scientific publications in journals with IF and 260 publications in professional journals. He has also sucessfully completed series of research projects oriented on ruminant problematics. Over the years he held numerous lectures for veterinary and professional agricultural public. He is a member of many professional associations, scientific boards, editorial boards and doctoral committee. Since 2008 he has been President of the Czech buiatric association.

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