

# SYSTEM OF ANTIOXIDANT PROTECTION IN COWS SUFFERING FROM SUB-CLINICAL FORM OF MASTITIS WITH THE USE OF LIPOSOMAL PREPARATION

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The article presents the results of experimental research on the impact of liposomal preparation made on the basis of plant material – *Hypericum perforatum L.*, on the level of peroxide oxidation products of lipids and the state of the antioxidant protection system in cows suffering from subclinical mastitis.

The research was conducted at the Molochni Riky LLC of the Brody District, Lviv Region, on cows with lactation number 2 and 3, which, by analogy, were divided into two groups: control and experimental, with 5 animals in each. The control group was composed by clinically healthy animals, the experimental group consisted of cows with signs of subclinical mastitis. To determine the affected area of the mammary gland, a 2 % aqueous solution of mastidine was used. Liposomal preparation was inter-cisternally injected to the animals in the experimental group in the affected fourth quarter of the udder three times a day, at 24 hour intervals, - 10 cm<sup>3</sup> the during the first 24 hours, and 5 cm<sup>3</sup> on each of the two subsequent days. Animal blood was sampled on the 1<sup>st</sup> day (prior to the administration of the drug) and on the 3<sup>rd</sup> and 9<sup>th</sup> day after its application.

It has been established that in sick cows there is an increase of TBA-active product levels in blood plasma as well as lipid hydroperoxides – an intermediate product. Thus, on the first day of the experiment (prior to the administration of the drug), the level of TBA-active products was 26.57 % (P<0.01), and lipid hydroperoxides level was higher by 32.85 % (P<0.001) than that of control animals. At the same time glutathione peroxidase activity in plasma and the content of restored glutathione in the red blood cells of cows suffering from subclinical form of mastitis were lower than in clinically healthy animals. In particular, GP activity was lower by 15.15 %, and the level of restored glutathione was reduced by 9.3 % (P<0.05) compared to control animals.

After intercosternal administration of liposomal to dairy cows, there was a decrease in the content of TBA-active products ( $7.17 \pm 0.25$  % vs.  $8.62 \pm 0.16$  %,  $P < 0.01$ ) and lipid hydroperoxides ( $1.42 \pm 0.08$  % against  $1.82 \pm 0.05$  %,  $P < 0.01$ ) compared with the level observed prior to treatment. Also there is a significant increase in glutathione peroxidase activity and an increase in the content of restored glutathione.

Thus, the use of a liposomal preparation in cows suffering from subclinical form of mastitis leads to a decrease in the intensity of peroxide oxidation of lipids in cows and leads to an increase in certain parameters of the glutathione link of the antioxidant system.

**Keywords:** CATTLE, SUBCLINICAL MASTITIS, SOMATIC CELLS, PRODUCTS OF PEROXIDE OF LIPIDS, SYSTEM OF ANTIOXIDANT DEFENCE.