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INFLUENCE OF KETOPROFEN ON REDUCTION OF EARLY EMBRYONIC MORTALITY IN HOLSTEIN CATTLE

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Zvenihorodska T.[1,2,3], Pareek Ch.S.[1,2], Miętkiewska K.[1,2], Kyrychko B.[3], Peredera R.[3]

[1]Department of Basic and Preclinical Sciences, Institute of Veterinary Medicine, Faculty of Biological and Veterinary Sciences, NCU, Torun, Poland.
[2]Division of Functional Genomics in Biological and Biomedical Research, Centre for Modern Interdisciplinary Technologies, NCU, Torun, Poland.
[3]Department of Surgery and Obstetrics, Faculty of Veterinary Medicine, Poltava State Agrarian University, Poltava, Ukraine

Abstract. Nowadays most abortions among cows occur within the first three weeks after insemination. Embryo death is the main reason why dairy cows cannot conceive at the desired time intervals. Three groups of cows were investigated in the «Promin» farm of Mykolaiv region. The Double OvSync synchronization scheme was used for cows and the non-steroidal anti-inflammatory drug Ketoprofen was used in one of the groups for the prevention of embryonic mortality on the 11th day after fertilization (n=25). For comparison, the other group was injected with the same amount of saline (n=25). No drugs were administered to the control group (n=25). It was Determined that in Ketoprofen group there was an increase in the percentage of fertilization, a decrease in the insemination index and the calving there was an increase in the percentage of fertilization, a decrease in the insemination index and the calving interval.

Key words: cows, anti-inflamatory drugs, fertilization, calving interval

Introduction. Approximately 32% of embryo loss in cows occurs from day 8 to day 27 after fertilization [5]. Between conception and reaching the blastocyst stage, only 45-55% of cows remain pregnant, while heifers – 70% [4]. If the death of an embryo occurs before day 16-17, estrus continues within normal intervals. However, if embryo death occurs after 16-17 days, the return the cycle takes longer, and the interval between cycles becomes irregular [3].

It is set that non-steroidal anti-inflammatory drugs affect the slowdown in the release of

prostaglandin F2α, which means that theoretically they can affect embryonic mortality. Currently, studies of different authors of the effect of ketoprofen on embryonic mortality vary: there are references to the positive effect [1, 2, 6] and there are references to the lack of effect [3, 5]. Thus, our goal was to investigate the effectiveness of using Ketoprofen together with the use of Double OvSync synchronization scheme.

Material and Methods. Research was carried out in the farm „Promin," located in the south of Ukraine 140 km north of Mykolaiv. Cows aged two to four years were selected for the experiment. To investigate the effect of Ketoprofen on cow fertilization, two experimental (n = 25 heads) and one control group (n = 25 heads) were created. In the control group, insemination was performed without the use of any drugs. The „Double OvSynch" scheme was used for cows of both research groups: Day 0 – Ovarelin 2 ml v/m (6.00), Day 7 – Enzaprost 5 ml, Day 10 – Ovarelin 2 ml, Day 17 – Ovarelin 2 ml, Day 24 – Enzaprost 5 ml, Day 26 – Ovarelin 2 ml, Day 27 insemination. On day 11 after insemination, the cows of the second test group were intramuscularly administered with Ketoprofen at a dose of 15 ml. The first test group was administered 15 ml of 0.9 % NaCl. Diagnosis of pregnancy was carried out on the 30–32 day after insemination by transrectal sono-graphic examination of the uterus and ovaries using a portable ultrasonic scanner for cattle breeding KX 5200 Kaixin. To determine effectiveness, the indicators were investigated the fertilization of cows, calving interval, insemination index.

Results and Discussion. The results of cow fertilization using ketoprofen are presented in Table 1.

Table 1

Fertilization of Holstein cows used by Ketoprofen

Groups	Number of fertilized cows	
	n	%
I group of cows (n=25)	16	64

II group of cows (n=25)	19	76*
Control (n = 25)	14	56

Note: * – $p < 0.05$ compared to control and to the first study group

In cows of the first group using the Double OvSync scheme, fertilization was 64%, which is 8 % higher compared to the control group. Fertilization was 76 % with Ketoprofen on day 11 after insemination , that is 20% higher compared to control ($p < 0.05$) and 12 % higher compared to the first study group ($p < 0.05$).

Other indicators of the reproductive function of cows using Double OvSync schemes are presented in Table 2.

Table 2

Indicators of reproduction qualities of Holstein cows using Double OvSync estrus synchronization schemes

Groups	Insemination index	Calving interval, d	Infertility, d
Control (n = 25)	2,8	120,2±5,4	45±2,5
I group of cows (n=25)	2,0	112,4±6,2	34±1,8
II group of cows (n=25)	1,4	98,3±5,4	30±2

The best performance of cow reproduction for the use of the Double OvSync estrus synchronization scheme and Ketoprofen: the calving interval for this group was 98.3 ± 5.4 days, the insemination index was 1.4, the number of days of infertility was 30 ± 2. Our studies coincide with a number of studies that indicate the effect of anti-inflammatory non-steroidal drugs on cow fertilization. Kraevskiy (2020) notes that the combined use of Surfagon on the fifth day and Ainil (Ketoprofen) on the eleventh day after fertilization in the

first group of cows contributes to their fertility by 7.5 % compared to control. Combined use of Surfagon on Day 5 and Ainil on Day 11 contributed to a 2.3-fold or 6.4 % reduction in embryonic death (p≥0,05) or by 6.4 % (p≥0,05) [2]. Travetskii (2017) and Husan Alkan (2018) indicate the rate of fertilization in cows when using ketoprofen [1, 6]. It should be noted that perhaps this effect gives a combination of the use of the Double OvSync scheme together with the use of Ketoprofen. Perhaps this line of research will continue in the future.

Conclusions. In the group of cows which used the Double OvSync synchronization scheme together with the intramuscular administration of Ketoprofen on the 11th day after insemination, there was an increase in the percentage of fertilization, a decrease in the insemination index and the calving interval.

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