Concentration of hormones in the blood of heifers using the injection of neurotropic-metabolic drugs

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There is changes in progesterone, estradiol, and insulin in serum of blood of heifers, whom where injected biologically active preparations neurotropic metabolic actions "Nanovulin-VHR" and "Stymulin-Vet" under skin near the plate-bone during sexual arousal after first insemination at 12 and 24 hours. Two times injection of drugs caused a significant increase of concentration of progesterone in blood of heifers on the seventh day and insulin on the second day of sexual cycle compared with control. Preparation "Nanovulin-VHR" also stimulated more allocation of estradiol on the seventh day of sexual cycle compared with control on 14,1% and the first researched group on 30,9%.

Progesterone, estradiol, insulin, medication, "Stymulin-Vet", "Nanovulin-VHR" hormones, heifers.

Intensive exploitation of cows is accompanied by functional disorders reproduction functions [7], the occurrence of which, is mostly due by inadequate feeding, physical inactivity, non-compliance with the parameters of maintenance, the influence of stress factors [3]. This often results a violation of functional connections of the hypothalamic-pituitary-ovarian system, which in most cases leads to prolonged decline in sexual activity. This situation with reproduction of herd leads to the loss of not only the offspring, but also the next lactation, which drastically reduces the profitability of milk production [13].

One of the modern methods of stimulating the reproductive ability of farm animals is using of non-hormonal agents neurotropic metabolic action. One of these is glutamic acid, which has a neurotropic action as one of the major energy metabolites in the nervous tissue. Glutamic acid can be included in the energy and plastic metabolism in various organs or body systems depending on the functional load that they do at the moment. As the only amino acid that is oxidized in the brain and serves as an energy source for the activity of neurons it has stimulating effect on the hypothalamic-pituitary system [12]. On the basis of glutamic acid

have been developed drugs "Stymulin-Wet" and "Nanovulin-VRH." The introduction, which stimulates a greater 22.9 - 35.7% of the number of cows ovulating follicles in the ovaries compared with control [5, 14].

The researching of progesterone, estradiol and insulin levels during the insemination of heifers for the use of neurotropic drugs metabolic actions may test positive or negative reactions of the body and reproductive system of females on their input.

The aim of the research was to study the dynamics of the concentration of sex hormones and insulin in the use of drugs neurotropic metabolic action.

Material and methods. The research was conducted in an agricultural production cooperative "Mayak", v. Medivka, Orativ district, Vinnitsa region. There were selected heifers of Ukrainian black and white dairy cattle with a live weight of 300-320 kg and age 16-17,5 months undertaken under the same conditions of feeding and maintenance.

Heifers in the experimental group were taken after they sync sexual inclination estrofan drug, a prostaglandin analogue F2b. The animals in the control group who came to the sexual hunt after the first insemination at 12 and 24 hours were injected subcutaneously in the blade saline in a volume of 20 ml. Heifers first and second experimental groups were given drugs "Stymulin-Wet" and "Nanovulin-VHR" respectively, the same pattern (Table. 1).

1. Scheme of researching selection blood when stimulated fertility cows with drugs "Stymulin-Wet" and " Nanovulin-VRH"

Groups	n, cows	Injection of drugs			Days of sexual cycle selection blood
		intra-muscularly	Under the skin after the first insemination in		
			12 hours	24 hours	
The control	4	2 ml «Estofan»	20 ml saline	20 ml saline	2

Experimental I	4	2 ml «Estofan»	20 ml «Stymulin-Wet»	20 ml «Stymulin-Wet»	2
Experimental II	4	2 ml «Estofan»	20 ml «Nanovulin-VHR»	20 ml «Nanovulin-VHR»	2

Determination of hormones in the blood of heifers was made by immune fluorescent method in the laboratory of clinical immunology CL "Feofania" SAA on automatic closed-end analyzer Immulite, of DPC (USA).

Resultsof research. To establish the influence of drugs "Nanovulin-VHR" and "Stymulin-Vet" on the content of hormones in the blood serum of experimental heifers there were separately compared their data with the control animals in the second and seventh day of sexual cycle (Table. 2).

2. Hormones of experimental heifers, n = 4

Hormones	Indicators	Groups					
		The control		Experimental I		Experimental II	
		2 day	7 day	2 day	7 day	2 day	7 day
Progesteron, ng/ml	M± m	0,27± 0,039	3,02± 0,231[1]	0,28± 0,049	4,30± 0,372[*1]	0,34± 0,059	4,20± 0,301[*1]
Estradiol, pg/ml	M± m	-	28,53± 3,350	-	22,95± 1,129	-	33,2± 2,235
Insulin, μIU/ml	M± m	2,98± 0,087	16,17± 0,834[1]	4,96± 0,848[*]	14,56± 0,468[*1]	5,99± 0,958[**]	13,35± 2,025[2]

Note: * p <0.05; ** p <0.01 - before control 1p <0.01, 2p <0.001 - 2 day sexual cycle

Comparative analysis of hormones blood on the second day of sexual cycle showed that the injection "Stymulin-Vet" has no effect on progesterone and "Nanovulin-VHR" raised its concentration by 20.6% compared with the control. The concentration of insulin probably doubled in blood heifers of both

experimenal groups. The second group of females its level was higher by 17.2% than in the first.

On the seventh day of sexual cycle was probably increased the concentration of progesterone in the blood of heifers experimental groups compared with the control and in-and by 29.8% and II and 28.1%. Concentration of insulin conversely decreased in animals who was injected drugs "Stymulin-Wet" and "Nanovulin-VHR" by 10.0% and 17.4% respectively.

Thus, while injecting drugs "Stymulin-Wet" and "Nanovulin-VHR," we can observe similar changes in hormonal levels of progesterone and insulin. Established that embryos are better acclimatized in the genital tract heifers if the 7th day of sexual cycle progesterone concentration in blood is greater than 2 ng / ml [8]. Therefore, an increase in progesterone levels heifers research can be considered positive impact of drugs on the reproductive system of females. The positive effect of medications is that in animal experiments progesterone on the seventh day was higher than in control animals.

The level of estradiol in the blood heifers of different groups on the seventh day of sexual cycle not responded to the same conduct of biologically active agents. Introduction drugs "Stymulinu-Vet" led to its decline by 19.6%, and "Nanovulinu-VHR" on the contrary increased by 14.1% compared to the control.

The comparative analysis of the data shows that an increase in progesterone levels second group of heifers on day 2 of the sexual cycle may be evidence of intensification luteinization of follicular cells of the follicle after ovulation induced more content lyutropina, which promoted the drug "Nanovulin-VHR."

Biological effects of insulin on the ovaries is due to insulin growth factor (IGF-1) [1], which has double effect. Great content causes a negative effect on follicular development and steroidogenesis and ovulation of follicles contributes to optimal. Thus, the injection of insulin-like factor-1 stimulates the fertility of cows [10].

According to literature data [10, 4] diet that provides energy and low content of free amino acids leads to a decrease in insulin levels and insulin-like

growth factor that promotes granular cell proliferation low follicles and reduces the synthesis of estrogen. This in its turn can lower concentrations of LH, which does not promote or encourage ovulation lack of corpus luteum, which possibly occurred in the control group of animals. Thus, the hormones insulin and sex hormones in cows varies depending on the day of sexual cycle. Introduction neurotropic drugs and metabolic achieves hormone levels physiologically necessary for engraftment embryos. For morphological and functional activity of the reproductive system of animals under the influence of the drug "Nanovulin-VHR" there is increasing progesterone and estradiol on the seventh day and insulin on the second day of sexual cycle that promotes healing of embryos.

Conclusions

1. In blood of experimental heifers between the second and seventh day of sexual cycle progesterone concentration increased significantly by 91.1 - 93.5% and insulin at 55.1 - 81.6%.

2. The introduction of biologically active drugs caused significant increase in the blood concentration of progesterone heifers on the seventh day and insulin on the second day of sexual cycle compared to controls.

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