

INCREASING THE LEVEL OF FERTILITY IN COWS BY HORMONAL TREATMENT**Blerta Mehmedi¹, Taulant Kastrati³, Luigj Turmalaj², Klajdi Nallbani⁴**¹*University of Prishtine, Faculty of Agriculture and Veterinary,
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With this study we aimed at assessing the hormonal stimulation in favor of improving fertility in cows. In Kosovo most bred cows are the breeds of Simmental and Holstein. For various reasons, often the level of expression of estrus is limited and its discovery is hard for the farmers. This leads to the extension of service periods and therefore it is associated with economic losses in production as well as reproduction. In order to avoid this consequence we did this experiment by hormonal stimulation of estrus (estrus synchronization) as follows. For this study we selected two farms with cows of the breed Holstein (each with 15 heads), where two groups were formed, where the group A was considered the experimental group and B the control group. Cows are from the age of 3–6 years and have approximately same conditions of treatment and management. All cows in the study have had a normal parturition and without infections after calving. The treatment of the group of cows in this experiment was done 60 days after calving as follows. The hormonal treatment involved a combination of hormones progestagen (CIDR) with Prostaglandin (Dinolytic®). The coil stayed 7 days in the vagina when we removed it, we injected PGF2 alpha (25 mg Dinoprost). The control group received no special treatment. The study was focused on the degree of estrus expression in percentage, the estrus expression in hours after treatment, the rate of fertilization with the first artificial insemination and the index of insemination. As for the control group we estimated the service period, the rate of fertilization with the first insemination and the insemination index. From the data of the study above indicators for the group of experiment showed that the degree of stimulation and synchronization of estrus was 93.3% (14/15), the average time of estrus performance 64 ± 8 hours and the rate of fertilization by the first insemination 71.4% (10/14). The insemination index gave us the result of 1.3 doses of semen spent per pregnant cow. The data for the control group gave us the result that the service period was 128 ± 14 days, the rate of fertilization with the first insemination 52% and the insemination index 2.2 doses of semen doses per cow were spent. From the above data we conclude that the hormonal stimulation of cows above 60 days after calving significantly improves their reproductive performance.

Key words: stimulation; service periods; estrus; fertilization**ЗГОЛЕМУВАЊЕ НА НИВОТО НА ПЛОДНОСТА КАЈ КРАВИ
СО ХОРМОНАЛЕН ТРЕТМАН**

Студијава беше насочена на проценување на хормоналната стимулација во интерес на подобрување на плодноста кај кравите. Во Косово најмногу се одгледуваат крави од расите сименталска и холштајн. Од различни причини нивото на изразување на еструсот често е ограничено и неговото откривање е доста тешко за фармерите. Ова води кон продолжување на сервисниот период и тоа е поврзано со економски загуби во производството, како и во репродукцијата. Со цел да се избегне оваа последица, го направивме овој експеримент со хормонална стимулација на еструсот (синхронизација на еструс). За оваа студија избравме две фарми, со крави од расата холштајн (секоја по 15 грла), од кои беа формирани по две групи: група А, која беше експериментална, и група Б како контролна. Кравите беа на возраст од 3 до 6 години и имаа приближно исти услови на одгледување. При испитувањето сите крави имаа нормално породување, без инфекции при телењето. Третманот на кравите во експериментот беше направен 60 дена по телењето. Хормоналниот третман вклучуваше комбинација на хормони прогестаген (CIDR) со простагландин (Dinolytic®). Навојот

остана 7 дена во вагината и потоа го отстранивме, инјектираме PGF2 алфа (25 mg Dinoprost). Контролната група не доби специјален третман. Студијата беше фокусирана на процентот на изразен еструс, еструсот изразен во часови по третманот, процентот на концепција (оплодување) со првото вештачко осеменување и индексот на осеменување. И кај контролната група ги проценивме сервисниот период, процентот на оплодување со првото осеменување и индексот на осеменување. Од добиените податоци, врз основа на индикаторите, за експерименталната група заклучивме дека степенот на стимулација и синхронизација на еструсот беше 93,3% (14/15), просечното време на еструсот изнесуваше 64 ± 8 часа и процентот на концепција со првото осеменување 71,4% (10/14). Индексот на осеменување изнесуваше 1,3 дози на сперма потрошена по стелна крава. Кај контролната група сервисниот период изнесуваше 128 ± 14 дена, процентот на плодност со првото осеменување 52% и индексот на осеменување 2,2 дози сперма потрошени по крава. Од наведените податоци заклучуваме дека хормоналната стимулација на крави 60 дена по телењето значително ги подобрува нивните репродуктивни перформанси.

Клучни зборови: стимулација; сервисен период; еструс; осеменување

INTRODUCTION

Synchronization of estrus (heat) involves manipulating the estrous cycle of female cows so that they can be bred at approximately the same time. There are several protocols available for synchronizing estrus. Traditional protocols are designed to mimic or control the Corpus Luteum on the ovary. New protocols have been designed to control ovulation and/or the follicular waves that occur on the ovary during the 21-day estrous cycle. There are three primary groups of products used to synchronize estrus or ovulation in dairy cattle: prostaglandins, progestins, and gonadotropins. Prostaglandin products have the trade names of Lutalyse, Estrumate, and IN-SYNCH and each contains prostaglandin F_{2α} (PGF_{2α}) or an analogue of PGF_{2α} [2,8,9]. The progestin products include the vaginal implant CIDR® and the Melengestrol Acetate (MGA) that are consumed orally [1, 4, 5, 7]. The GnRH products are Cystorelin, Factrel, and Fertagyl. There are four prostaglandin protocols being used to synchronize estrus in cattle. Two of these programs require two injections of prostaglandin and two require just one injection. Traditionally, the injections of prostaglandin are administered 11 days apart from breeding after the second injection. However, recent data suggests that administering the second injection 14 days after the first injection has resulted in more females exhibiting estrus. The two injection protocol should theoretically synchronize estrus in cyclic females within 2 to 5 days after the second injection. Synchronization responses of 70 to 80% of females within a herd are common with this protocol, but can be highly variable depending on the number of anestrus females in the herd. Timed insemination with this protocol is not recommended. Estrous synchronization using the vaginal insert CIDR® consists of placing the insert in the vagina on day

0, giving an injection of prostaglandin on day 6, and removing the vaginal insert on day 7 [1, 2, 7, 10]. Detect heat from days 8 to 11 and inseminate all females that exhibit estrus. To assure satisfactory synchronization of estrus, an injection of prostaglandin must be given to all females one day before the removal of the vaginal insert. Removal of the insert on day 7 results in a drop in circulating plasma progesterone, triggering estrus within three to four days. The progestin in the vaginal insert can induce estrous cycles in anestrus cows and advance puberty in heifers. The majority of the females that respond to this protocol will exhibit estrus between 25 and 72 hours after the prostaglandin injection. A new method for synchronizing estrus in mature cows (not for heifers) is to administer a GnRH injection followed one week later by an injection of prostaglandin. Females are observed for signs of estrus beginning 36 hours before and up to 6 days following the prostaglandin injection. Cows are inseminated 12 hours after standing estrus is observed. Most cows will exhibit estrus by day 4 after prostaglandin injection although some may exhibit estrus up to 6 days after prostaglandin [2, 6, 9, 10]. The estrus following GnRH is fertile and cows can be inseminated.

MATERIAL AND METHODS

The study was conducted in Kosovo in 2011–2012. For the study we selected 2 farms with the Holstein breed with over 9000 liters of milk production per year. Cows are from the age of 3–6 years and have optimal health condition. They are about 60 days after calving and optimal reproductive conditions (data resulting from rectal and ultrasound control of pregnancy). The hormonal treatment was carried out on the farm with 15 cows in the experiment as follows:

Day 0: placement of CIDR in the vagina.

Day 7: CIDR removal and injection of PGF₂α.

The control group of 15 cows was not treated with specific hormones. Both groups were surveyed for a range of indicators such as the degree of synchronization, the average arrival time in heat after hormonal treatment, the insemination index and the fertilization rate (group A) and the service period, the index of insemination and the fertilization rate (group B). The data obtained were compared between the two groups and statistical processing was done.

RESULTS OF THE STUDY

As described above one of the main objectives of the study was to evaluate the efficacy of the hormonal treatment in favor of synchronization of heat. The literature data used for this study show a higher efficiency of heat synchronization through a combination of CIDR with PGF₂α. In our study the obtained results are shown in the Table 1.

Table 1

Results of the degree of heat synchronization in cows

Cows in the experiment	Hormonal treatment	Cows in estrus (heads)	Synchronization rate (%)
15	CIDR + PGF ₂ α	14	93.3

From the submitted results we can conclude that this scheme of synchronization of heat in cows is quite efficient. The vaginal coil due to its content (progesterin) plays an essential role in sensitizing the responsible structures for the production of specific hormones in favor of reproduction. On the other hand PGF₂α induces regression of CL, or its remaining or luteinized follicles paving the way for a new estrus cycle. The time of heat exhibit after hormonal treatment has fluctuated among cows in the experiment, but from the shown results after the removal of the vaginal coil and injection of PGF₂α it results in an average of 64 ± 8 hours. Cows were inseminated about 12 hours after the onset of heat with the traditional recto cervical method. Many authors in their studies have this indicator from 24 to 72 hours after the injection of

PGF₂α. In connection with the fertilization rate for the experimental group and the insemination index for the two groups we have the following results:

Table 2

Fertilization rate and insemination index in two cow groups in the study

Groups	Heads	Fertilization rate (%)	Insemination rate (Semen doses per fertilization)
Experiment	15	71.4	1.3
Control	15	52	2.2

Fertilization rate is about 20% higher in the experimental group which is clearly a good indication that speaks for the supremacy of synchronization of heat versus the group of cows with no hormonal treatment. The idea that after calving and especially in cows with higher milk production "to go to the cow" is effective. The insemination index runs synchronous with the first indication; approximately one semen dose was spent less in the experimental group than in the control group. Advantages of synchronization of heat can be measured also in the service periods where in the control group this indicator was 128 ± 14 days. We believe that the methodical hormonal treatment with standard schemes about 60 days after calving of dairy cows is theoretically and practically effective and has economic benefits for the farmers. A lot of work remains in terms of awareness of farmers but sometimes even veterinaries "embrace" modern methods of reproduction of cattle, farms, regardless of economic management they may have.

CONCLUSIONS

The hormonal treatment of cows, synchronization of heat of 60 days after calving results to be effective. From 15 treated cows 14 of them came in heat or 93.3%. Time of exhibit of heat was 64 ± 8 hours on average.

The fertilization rate in the group of cows with synchronized heat is 71.4% versus 52% in the control group. This priority comes as we think probably from better management of heat in cows with synchronization

The insemination index in the experimental group has priority over the control group with ap-

proximately one dose of semen spent less per the fertilized cow [1.3/2.2].

With the obtained results we encourage specialists and farmers to apply the methodology of synchronization of heat in favor of economic profitability of the farm and the opportunity of reducing infertility.

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