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THE RESULTS OF THE APPROBATION OF METHODS OF HITSYNCH AND OVSYNCH HEAT SYNCHRONIZATION IN BEEF PRODUCING COWS

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The article presents data on the comparative effectiveness of cattle heat synchronization schemes using the Hitsynch and Ovsynch methods, various GnRH, prostaglandin F2a and estrogens were used in synchronization schemes to activate sexual processes and increase fertilization. In order to increase their effectiveness, biologically active substances were included in the synchronization schemes.

The research objective was to determine the effectiveness of various synchronization schemes with added biologically active substances.

The authors noted that stimulation of the genitals using the Hitsynch and Ovsynch protocols with inclusion of biologically active substances (vitamins, antiseptic stimulant Dorogov f2) in the schemes significantly improved the cow libido and fertilization. These indicators were more pronounced when synchronizing heat using the Hitsynch protocol.

The novelty of the conducted research is the determination of effective modern schemes of heat synchronization. It was found that the combined administration of hormonal agents "Surfagon" at a dosage of 10 ml, "Estrofan" at a dosage of 2 ml intramuscularly, biological active substances (ASD-f2 5%-20.0 ml on days 0, 2, 4 and after 36 hours subcutaneously), vitamin complex "Tetravit" (Vitamins A, D₃, E, F), and estrogen hormone ESR (2% synestrol) enhances the manifestation of sexual processes, stimulates heat, and increases the fertility of cows.

Key words: heat synchronization, Hitsynch, Ovsynch, insemination index, pregnancy, open period, infertility.

ЕТ БАҒЫТЫНДАҒЫ СИЫРЛАРДЫҢ КҮЙЛЕУІН СӘЙКЕСТЕНДІРУДІҢ ХИТСИНХ ЖӘНЕ ОВСИНХ ӘДІСТЕРІН СЫНАҚТАН ӨТКІЗУ НӘТИЖЕЛЕРІ

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Мақалада Хитсинх және Овсинх әдістемелері бойынша ірі қара малдың жыныстық циклдерін сәйкестендіру нобайларының салыстырмалы тиімділігі жөніндегі мәліметтер келтірілген. Жыныстық үдерістерді белсендіру және ұрықтануды арттыру үшін сәйкестендіру нобайларында

әртүрлі GnRH, простагландин F2α және эстрогендер қолданылған. Олардың тиімділігін арттыру мақсатында сәйкестендіру нобайларына биологиялық белсенді заттар қосылды.

Зерттеудің мақсаты биологиялық белсенді заттарды қосу кезінде әртүрлі сәйкестендіру нобайларының тиімділігін анықтау болды.

Авторлардың атап айтуынша, күйлеуді Хитсинх және Овсинх әдістерімен сәйкестендіру кезінде нобайға биологиялық белсенді заттарды (дәрумендер, Дороговтың антисептикалық стимуляторы 2ф) қосымша енгізумен қатар, сиырлардың жыныстық мүшелерін ынталандыру сиырлардың күйге келуін едәуір жақсартады және ұрықтанғыштығын арттырады. Бұл көрсеткіштер күйлеуді Хитсинх әдісі бойынша сәйкестендіру кезінде неғұрлым айқынырақ болды.

Жүргізілген зерттеулердің жаңалығы сиырлардың күйлеуін сәйкестендірудің тиімді заманауи нобайларын анықтау болып табылады.

Гормоналдық препараттар "Сурфагонды" 10 мл, "Эстрофанды" 2 мл мөлшерде бұлшық етке, биологиялық белсенді заттарды (0, 2, 4 күндері және 36 сағаттан кейін тері астына АСД-ф2 5% - 20,0 мл), дәрумендік кешен "Тетравитті" (А, Д₃, Е, F) 10 мл және эстрогендік гормон ЕСР (2% синестрол) 2 мл мөлшерде бұлшықетке енгізу жыныстық үдерістердің байқалуын белсендіреді, күйлеуді ынталандырады және сиырлардың ұрықтануын арттырады.

Түйінді сөздер: күйлеуді сәйкестендіру, Хитсинх, Овсинх, ұрықтандыру индексі, буаздық, сервис-кезең, бедеулік.

РЕЗУЛЬТАТЫ АПРОБАЦИИ МЕТОДОВ СИНХРОНИЗАЦИИ ПОЛОВОЙ ОХОТЫ ХИТСИНХ И ОВСИНХ НА КОРОВАХ МЯСНОГО НАПРАВЛЕНИЯ ПРОДУКТИВНОСТИ

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В статье приведены данные сравнительного анализа эффективности схем синхронизации полового цикла у крупного рогатого скота по методике Хитсинх и Овсинх, для активизации половых процессов и повышения оплодотворяемости в схемах синхронизации применяли различные GnRH, простагландина F2α и эстрогенов. С целью повышения их эффективности в схемы синхронизации включали биологически активные вещества.

Целью исследования было определение эффективности различных схем синхронизации при включении в них биологически активных веществ.

Отмечено, что стимуляция гениталий при методах синхронизации половой охоты Хитсинх и Овсинх с дополнительным включением в схемы биологически активных веществ (витамины, антисептик стимулятор Дорогова ф2) значительно улучшает приход коров в охоту и повышает оплодотворяемость. Данные показатели были более выражены при синхронизации половой охоты по методике Хитсинх.

Новизной проведенных исследований является определение эффективных современных схем синхронизации половой охоты. Установлено, что комплексное применение гормональных препаратов «Сурфагон» в дозе 10 мл, «Эстрофан» в дозе 2 мл внутримышечно, биологический активных веществ (АСД-ф2 5%-20,0 мл на 0, 2, 4 дни и спустя 36 часов подкожно), витаминный комплекс «Тетравит» (Витамины А, Д₃, Е, F) и эстрогенный гормон ЕСР (2% синестрол) активизирует проявление половых процессов стимулирует проявление половой охоты и повышает оплодотворяемость коров.

Ключевые слова: синхронизация половой охоты, хитсинх, овсинх, индекс осеменения, стельность, сервис-период, бесплодие.

Introduction

The use of biotechnological methods of animal reproduction makes it possible to increase the reproductive function of animals. An effective way to increase cattle reproduction on modern farms is the usage of several protocols for stimulation and synchronization of the sexual cycle [1, p.8.2, p. 77.3, p. 335].

Synchronization of sexual hunting optimizes fertilization, reduces variability in days before the first estrus, and reduces the service period and duration of intervals between calving in all cows in the herd [4, p. 46.5, p. 131].

A seasonal hotel is one of the basic technological elements of beef cattle breeding and some authors recommend that seasonal calving be carried out in beef cattle breeding, despite the climatic conditions and their placement zones [6, p. 11].

The development of more effective schemes for synchronizing sexual hunting is an urgent problem in increasing the reproductive ability of cattle. An important preliminary step in increasing fertility is the choice of various combinations of prostaglandins and releasing hormones in synchronization schemes and the most favorable periods for the use of these schemes [7, p. 20].

Currently, the following synchronization methods are the most common: Ovsynch, Co-Synch, Hit-Synch. The use of prostaglandins in combination with gonadotropin-releasing hormone (GnRH) can improve the efficiency of ovulation search and synchronization. Usually, several variants of the OvSynch protocol are used for this. First, GnRH injections (fertagil, surfagon, etc.) should be made. The first injection of GnRH alters follicle development by stimulating ovulation and the formation of a yellow body or the formation of a yellow body of a dominant follicle, and when a new group of follicles appears, a new dominant follicle appears. If there was already a yellow body in the ovary at the beginning of the protocol, then its function is extended for 7 days. Prostaglandins can be re-administered after 24 hours. The second GnRH injection is performed on the 9th-10th day after prostaglandin injection, i.e. 48-72 hours (preferably 60 hours) (if a second injection is performed). GnRH stimulates the release of large amounts of LH. This hormone triggers ovulation and ensures its synchronicity. Insemination is carried out at a set time - 16 hours after GnRH injection. This method requires four times the work but is carried out at a strictly set time, so there is no need to identify any signs of hunting. This scheme is the most common [8, p. 161].

Co-Synch scheme - this method is similar to the method described above. It is effective for both dairy and beef cattle. This scheme requires three-fold work with cattle. The scheme is similar, but the only difference is that on the 9th day, the 2nd injection of GnRH is administered, and during this injection, all cows are artificially inseminated at the same time. Hunting detection is also not required [9, p. 12].

The application of the Hitsynch protocol differs from the scheme mentioned earlier by the administration of another ECP drug (cypionate, estradiol). The protocol itself provides for the use of gonadotropin-releasing hormone on the zero-day of the sexual cycle in cattle, and prostaglandins are used on the 7th day. According to this protocol, ECP is introduced on the 8th day, artificial insemination of animals during hunting is carried out on the 9th day, and insemination of all other animals (even without signs of hunting) is carried out frontally on the 10th day [10, p. 174].

Therefore, the use of hormonal drugs that correct the functional activity of the hypothalamic-pituitary-gonadal system and metabolic status should be a necessary biotechnological technique for the intensification of the reproduction of beef cattle. At the same time, further improvement of methodological approaches and the search for more rational methods of hormonal treatment for synchronizing hunting and cow therapy remains one of the urgent tasks of veterinary practice [8, p. 162].

Based on the above, we set a goal to determine the effectiveness of short synchronization protocols of Ovsinh and Hitsinh when including biologically active substances in cows of meat productivity in the schemes.

Material and research methods

The research was conducted in 2021-2022 in the agricultural production cooperative (APC) "Azamat 2" of the Beskaragai district of the Abai region. The object of research was cows of the Kazakh white-headed breed (n=59). During the study period, the cows were in the same conditions of maintenance and feeding, which met veterinary and zootechnical requirements. At the first stage of the study, the animals were selected for synchronization of sexual hunting by conducting a gynecological examination. After the selection of animals, hormonal stimulation of sexual hunting was carried out according to the Ovsynch and Hitsynch protocols unified according to the schemes developed by us, namely, the addition of biologically active substances. For the experiment, 3 groups of animals were formed to determine a more effective synchronization scheme for sexual hunting. The conditions of the cows were satisfactory and met the requirements for synchronizing the sexual cycle. The farm of the SEC "Azamat 2" was safe for infectious and invasive diseases.

The animals of the first group (20 heads) served as controls. To synchronize sexual hunting on day 0, gonadotropin-releasing hormone was intramuscularly applied to them, prostaglandin F2a on day 7, estrogenic hormone on day 8, and artificially inseminated with sexual hunting on day 9, and on day 10, frontal insemination of the remaining cows was performed.

The cows of the second group (20 heads) also used Hitsynch synchronization schemes and administered biologically active drugs. Artificial insemination was performed in the first group.

In the third group (19 heads), the Ovsynch sexual hunting synchronization scheme was used, namely, gonadotropin-releasing hormone was administered twice on day 0 and 8, prostaglandin-type drug on day 7, artificial insemination was also performed, as in the previous two groups.

Sexual hunting in cows in all groups was detected in the morning and evening with the help of a probe bull, unable to coitus – with an apron. The effectiveness of the use of synchronization of sexual hunting was

determined by the manifestation of sexual hunting, indicators of insemination performance, percentage of pregnancy, insemination index, duration of the service period, and percentage of infertile cows.

Pregnancy was established on the 60th day after insemination using a Mindray Z5 Vet ultrasound scanner (China) with a 5-7 MNz rectal sensor.

Statistical data processing was performed on a personal computer using the function wizard (d) of the Microsoft Excel program to obtain the arithmetic mean (M), standard error (m), and reliability of the compared values (P).

Results and Discussion

To unify synchronization according to the Hitsynch protocol, we took the drug "Surfagon" in a dose of 10 ml as an analog of gonadotropin-releasing hormone, and prostaglandin F2a its synthetic analog - "Estrophan" in a dose of 2 ml intramuscularly, as an estrogenic hormone ECP - 2% synestrol 2.5 ml subcutaneously (the first group).

In the second group, Tetravit vitamin complex (vitamin A, D3, E, F), biologically active substances 5%-20 ml of ASD-f2 subcutaneously for 0, 2, and 4 days were included in this scheme.

We compared the synchronization technique of Hitsinh with the Ovsinh technique, where we also took the drug "Surfagon" as an analog of gonadotropin-releasing hormone, but it was used twice, the first time at a dose of 10 ml, and the second time 5 ml with an interval of 8 days. Its synthetic analog, Estrophan, was used as prostaglandin F2a in a dose of 2 ml intramuscularly. Also, in this scheme, we included the Tetravit vitamin complex twice with an interval of 10 days, 10 ml, 5% -20 ml of ASD 2f 3 times with an interval of 36 hours (Figure 1).

Artificial insemination in all groups was carried out taking into account the manifestation of sexual hunting on day 9 and frontal insemination of the remaining animals on day 10 of synchronization of sexual hunting.

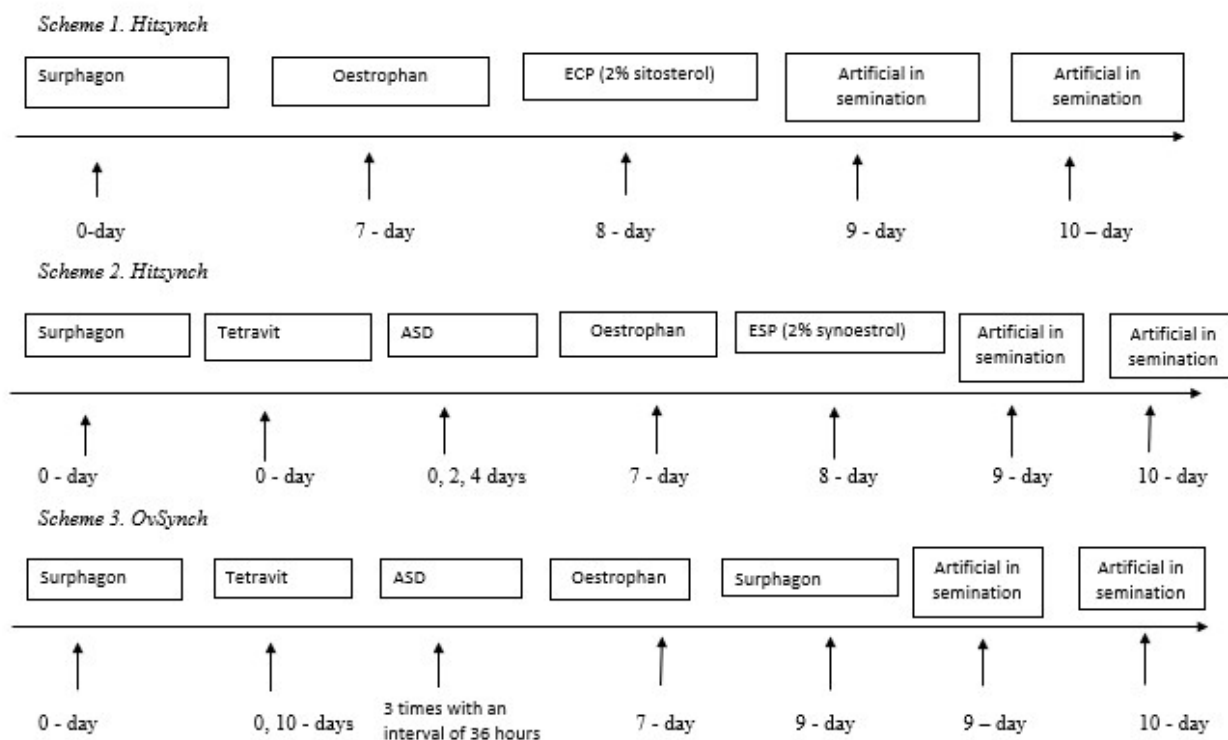


Figure – 1 Schemes of synchronization of sexual hunting in cows

The analysis of the obtained research results indicates that when using the synchronization scheme of Hitsynch in its pure form, without additional components (the first group), $85.0 \pm 1.60\%$ of cows went hunting, the results of rectal examination confirmed pregnancy in $75.0 \pm 1.94\%$ of animals. At the same time, the insemination index for the group was 1.33, the service period was 70 days. For this group, $25.0 \pm 1.94\%$ of cows remained infertile (Table 1).

Table 1. – Results of synchronization of sexual hunting by groups

| Groupd | Numb er | In hunting period | | springing | | Service- period, days | Insemin ation index | Left ineffectual | |
|---|------------|-------------------|-----------|-----------|-------------------------------|-----------------------------|---------------------------|------------------|-----------|
| | | numb er | % | к-во | % | | | к-во | % |
| 1 | 20 | 17 | 85,0±1,60 | 15 | 75,0±1,94 | 73,4±2,66 | 1,33 | 5 | 25,0±1,94 |
| 2 | 20 | 20 | 100,0 | 17 | 85,0±1,60 $P_1 \leq 0,001$ | 69,6±2,43 | 1,17 | 3 | 15,0±1,60 |
| 3 | 19 | 10 | 52,6±2,18 | 15 | 78,9±1,78 $P_2 \leq 0,05$ | 72,7±3,89 | 1,9 | 4 | 21,1±1,78 |
| Note: P is in comparison with the indicators of group 1; P2 - in comparison with the indicators of group 2 | | | | | | | | | |

The additional introduction of vitamin complexes and biologically active substances into the synchronization protocol of Hitsynch increased the effectiveness of the proposed scheme. Thus, the stimulating effectiveness of the scheme can be judged by the expression of sexual hunting in cows on the 9th and 10th days. At the same time, sexual hunting was manifested in all cows of this group. Pregnancy in this group was confirmed in 17 cows, which amounted to 85.0±1.60%, with an insemination index of 1.17. The service period in cows of this group was 69.2 days, 15.0±1.60% of animals remained infertile in the group.

In the third group, when using the synchronization scheme, Ovsynch came to hunt from 52.6 ±2.18% of cows, which was significantly lower by 47.4% compared with the indicators of the second group. Pregnancy in this group was confirmed in 78.9±1.78% of animals, which is 3.9% higher than with the pure synchronization scheme of Hitsynch and 6.1% less than with the addition of biologically active substances to the Hitsinh scheme.

Thus, the protocol of synchronization of sexual hunting by Hitsynch without the use of additional biologically active substances is effective in itself, in which 85.0±1.60% of cows came to the hunt on the days of artificial insemination, and fertilization was 75.0±1.94%. The additional use of biologically active substances (tetravit, ASD f2) in the synchronization scheme of sexual hunting according to the Hitsynch method provided 100% manifestation of sexual hunting in experimental animals, and also increased fertilization - 85.0± 1.60%.

Also, when using the synchronization scheme according to the Ovsynch method with the addition of biologically active substances, although the arrival of cows in hunting was lower (52.6±2.18%), for, fertilization in the group was higher by 3.9% (78.9±1.78%) than with the Hitsynch method without the use of biologically active substances (Figure 2).



Figure – 2 Identification of sexual hunting with the help of a stud bull with apron

It should be noted that to stimulate and synchronize the sexual cycle, we selected cows that calved no earlier than 60 days before the start of synchronization of sexual hunting, which was necessary for the complete involution of changes in the genitals of cows after childbirth, as well as for obtaining calves in the desired period of the year. The results of the analysis of the statistical service period did not have a significant difference between the indicators of the studied groups.

Therefore, it can be considered that the additional introduction of biologically active substances into the synchronization schemes of sexual hunting positively affects the neurohumoral regulation of sexual processes, providing structural changes in the genitals, thereby creating normal conditions for the processes of fertilization and pregnancy in animals.

Conclusion

Thus, stimulation of the genitals according to the protocols of synchronization of sexual hunting of Hitsynch and Ovsynch with the additional inclusion of biologically active substances in the schemes (vitamins, antiseptic stimulator Dorogova f2) significantly improves the arrival of cows in hunting and increases fertilization. These indicators were more pronounced when synchronizing sexual hunting according to the Hitsynch protocol. Thus, the complex use of hormonal drugs "Surfagon" in a dose of 10 ml, "Estrophan" in a dose of 2 ml intramuscularly, biologically active substances (ASD-f2 5%-20.0 ml on 0, 2, 4 days and after 36 hours subcutaneously), the vitamin complex "Tetravit" (Vitamins A, D3, E, F) and the estrogenic hormone ECP (2% synestrol) he activated the manifestation of sexual processes by stimulating the manifestation of sexual hunting and increasing the fertilization of cows.

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