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THE INFLUENCE OF THE PUERPERAL AFFECTIONS ON INSEMINATION INDEX AND UTERINE REPOSE IN COWS

INFLUENȚA AFECȚIUNILOR PUERPERALE ASUPRA INDICELUI DE ÎNSĂMÂNȚARE ȘI A REPAUSULUI UTERIN LA VACĂ

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The observations were made, through a year, at SD Timisoara on cows from Holstein-Friesian and Fleckvieh breed. The puerperal period was observed, the incidence of the endometrites was recorded and there were calculated two reproduction parameters: the Insemination Index (Ig) and the Uterine Repose duration (UR) (Open days). The Insemination Index (service/conception) (Ig) represents the mean number of artificial inseminations performed in order to obtain a pregnancy. Uterine Repose represents the time interval, in days, from calving until the fecund insemination. The Uterine Repose has two components: Voluntary Waiting Period (VWP) (time interval from calving until the introduction of the female to reproduction) and Service Period (SP) (time interval from the end of the VWP until the fecund insemination). There were noticed that the incidence of the uterine infections were significant higher ($p < 0.05$) at cows from Holstein-Friesian breed (63.3%), compared to the cows from Fleckvieh breed (41.3%). The Insemination Index was significant lower ($p < 0.05$) at cows without uterine infections (1.9), compared to the cows with uterine infections (2.5). The mean duration of the Uterine Repose was significant lower ($p < 0.05$) at healthy cows (114.7 days), compared with cows with uterine infections after calving (182.2 days). It seems that the cows from Fleckvieh breed are more resistant to the exploitation conditions for milk production than compared with cows from Holstein-Friesian breed.

Key words: cow, Insemination Index, Uterine Repose

Introduction

The normal development of the involutive processes at uterine level, during the puerperal period has a great influence on the resuming the reproductive function after calving and, specially, on getting the cow pregnant again (2).

The high incidence of the reproduction disorders in dairy cows is influencing the main reproductive parameters and causing important economic loses by not accomplishing the desired milk production. At these direct loses there are added the expenses with correcting the infecundity state (1).

The farmers' attention should be focused on close monitoring the pregnant cows, feeding and proper attendance of the cows during the dry period, calving assistance, the control of the puerperal period, heat detection and artificial insemination at optimal time (3).

The aim of our study was to establish if there are differences for Insemination Index and Uterine Repose between Holstein-Friesian and Fleckvieh cows with and without uterine infections.

Materials and Methods

The investigations were conducted during a full year at SD Timisoara, on cows from Holstein-Friesian and Fleckvieh breed.

The evolution of puerperal period and the incidence of uterine infections (endometrites) were monitored in cows. The heat behavior was also monitored, in order to establish the optimal time for artificial insemination. Females that manifested heat after 45 days, from calving, were artificial inseminated and the ones that returned in heat were reinseminated.

Cows with reproduction disorders (anoestrus, endometrites) were treated with antibiotics and hormones.

There were calculated two reproduction index: Insemination Index (service/conception) and the duration of the Uterine Repose, for both cows with uterine disorders and healthy cows.

The Insemination Index (service/conception) (I_g) represents the mean number of artificial inseminations performed in order to obtain a pregnancy and it was calculated after the following relation:

$$I_g = \frac{TIA}{G}$$

I_g – mean inseminations (services) performed in order to obtain a pregnancy

TIA – total inseminations at cows diagnosed as pregnant

G – cows diagnosed as pregnant

Uterine Repose (UR) (open day) represents the time interval, in days, from calving until the fecund insemination. The Uterine Repose has two components: Voluntary Waiting Period (VWP) (time interval from calving until the introduction of the female to reproduction) and Service Period (SP) (time interval from the end of the VWP until the fecund insemination).

$$UR = VWP + SP$$

Results and Discussions

The uterine infections during the puerperal are the primary causes for prolonging the Uterine Repose and for increasing the number of artificial inseminations required for one pregnancy (4).

In table 1 is presented the occurrence of uterine infections at cows from Holstein-Frisian and Fleckvieh breed.

Table 1

Occurrence of uterine infections at Holstein-Frisian and Fleckvieh cows breeds

Breed	Females that calved (n)	From which:					
		Without uterine infections		With uterine infections		Reforms	
		n	%	n	%	n	%
Holstein-Friesian	42	11	26.2 ^a	27	64.3 ^a	4	9.5 ^a
Fleckvieh	46	22	47.8 ^b	19	41.3 ^b	5	10.9 ^a
Total	88	33	37.5	46	52.3	9	10.2

a-a= p>0.05; a-b p=<0.05

Analyzing data presented in table 1, it can be noticed that from 42 cows Holstein-Friesian cows that calved, 27 (64.3%) had uterine infections and from 46 Fleckvieh cows that calved 22 (41.3%) had uterine infections. The differences between the two breeds are significant (p<0.05). In respect to the reformed cows, because of the reproduction disorders, the differences between the two breeds are not significant (9.5% Holstein-Friesian and 10.9% Fleckvieh cows reformed).

From the data presented, it seems that cows from Holstein-Friesian breed are more sensitive to uterine infections, compared to the cows from Fleckvieh breed.

In table 2 we presented the values for Insemination Index (Ig) and Uterine Repose (UR) calculated for cows without uterine infections, with normal evolution of the puerperal period.

Table 2

Insemination Index (Ig) and the duration of Uterine Repose (UR) at cows without uterine infections after calving

Breed	Artificial inseminations performed (n)	Pregnant females (n)	Insemination Index (Ig)	Σ days UR	\bar{x} UR (days)
Holstein-Friesian	19	10	1.9 ^a	1,185	118.5 ^a
Fleckvieh	37	19	1.95 ^a	2,141	112.7 ^a
Total	56	29	1.93	3,326	114.7

a-a=p>0.05

From the data presented in table 2, it can be noticed that for the 10 pregnant cows, from Holstein-Friesian breed, were performed 19 artificial inseminations, this is representing an Insemination Index of 1.9. At the 19th pregnant cows from Fleckvieh breed, 37 artificial inseminations were performed, which represents an

Insemination Index of 1.95. Between the two breeds there are no significant differences ($p>0.05$).

In respect to the Uterine Repose, the cows from Holstein-Friesian breed had a mean calving interval of 118.5 days and the cows from Fleckvieh breed had a calving interval of 112.7 days. The differences between the two breeds are not significant ($p>0.05$).

In table 3 we presented the values for Insemination Index and Uterine Repose at cows with uterine infections after calving.

Table 3

Insemination Index and duration of Uterine Repose at cow with uterine infections after calving

Breed	Artificial inseminations performed (n)	Pregnant females (n)	Insemination index (Ig)	Σ days UR	\bar{x} UR (days)
Holstein-Friesian	45	17	2.6 ^a	3,348	196.9 ^a
Fleckvieh	37	16	2.3 ^a	2,666	166.2 ^b
Total	82	33	2.5	6,014	182.2

a-a= $p>0.05$; a-b= $p<0.05$

Analyzing data presented in table, it can be noticed that the 17 pregnant cows from Holstein-Friesian breed were obtained after 45 artificial inseminations, which represents an insemination index of 2.6. The 16 pregnant Fleckvieh cows were obtained after 37 artificial inseminations, which represents an Insemination Index of 2.3. The differences between the two breeds are not significant ($p>0.05$).

Regarding the Uterine Repose, in Holstein-Friesian cows it is on an average of 196.9 days, and in Fleckvieh cows it is on an average of 166.2 days. The differences between the two breeds are significant ($p<0.05$). And from this point of view, the Holstein-Friesian cows are more sensitive to the environment and exploitation conditions, compared to the Fleckvieh cows.

In table 4 we presented, comparative, the values for Insemination Index and Uterine Repose in cows with and without uterine infections.

Table 4

Insemination Index and the duration of the Uterine Repose at cows with and without uterine infections after calving

Specification	Artificial inseminations performed (n)	Pregnant females (n)	Insemination index (Ig)	Σ days uterine repose	\bar{x} UR (days)
Females without uterine affections	56	29	1.9 ^a	3,326	144.7 ^a
Females with uterine affections	82	33	2.5 ^b	6,014	182.2 ^b

a-b= $p<0.05$

In the lot of 29 cows without uterine infections there is a mean Insemination Index of 1.9, and in the case of the 33 females with uterine infections there was registered a mean Insemination Index of 2.5. The differences between the two lots are significant ($p < 0.05$).

Regarding the average duration of the Uterine Repose, it was significantly lower ($p < 0.05$) at cows without uterine infections (114.7 days), compared with cows with uterine infections (182.2 days).

Data obtained during this study confirm the data indicated in related literature, showing that uterine infections are negatively influencing the main reproduction indices in dairy cows. Comparing data obtained in the two studied groups of cows, it seems that Fleckvieh cows are more resistant to environmental and exploitation conditions compared to Holstein-Friesian cows.

Conclusions

- The Insemination Index is significant lower at cows without uterine infections (1.9), compared to the cows that suffered endometrites after calving (2.5);
- The mean duration of Uterine Repose is significant lower at healthy cows (114.7 days), compared to the cows with uterine infections after calving (182.2 days);
- The incidence of uterine infections is significant higher at Holstein-Friesian cows (64.3%), compared to the Fleckvieh cows (41.3%);
- It seems that cows from Fleckvieh breed are more resistant to the environmental and exploitation conditions, compared to the cows from Holstein-Friesian breed.

Bibliography

1. **Foote, H.**, (1996)- *Physiology and management*, J. Dairy Sci, 79, 960-990
2. **Garverich, A.H.** (1993)- Getting problem cows pregnant. University of Missouri-Columbia, In press
3. **Ingrand, S, Cournut, S., Dedieu, B., Anthenaume, F.**, (2003)- *La conduite de la reproduction du troupeau de vaches allaitantes*, Inra Prod., Anim, 16, (4), 263-270
4. **Păcală, N., Corin, N., Bencsik I., Dronca D., Carabă V., Telea Ada, Ivan Alexandra** (2006), *The inducing and synchronization of ovulation in dairy cows after parturition*, Lucr. Șt. Zoot. Și Bioteh. Timișoara, vol 39 (1), 111-114

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Observațiile s-au efectuat la SD Timișoara, pe durata unui an calendaristic, la vaci din rasele Holstein-Friză și Fleckvieh. S-a urmărit modul în care a evoluat perioada puerperală, incidența endometritelor și s-au calculat doi parametri de reproducție: indicele de însămânțare (Ig) și durata repausului uterin (RU). Indicele de însămânțare (service/conception) (Ig) reprezintă numărul mediu de însămânțări artificiale efectuate pentru obținerea unei gestații. Repausul uterin (RU) (open day), reprezintă intervalul de timp, în zile, de la parturiție până la însămânțarea fecundă. Repausul uterin are două componente: Perioada voluntară de așteptare (VWP) (intervalul de timp de la fătare până la introducerea femeii din nou la reproducție) și Service Period (SP) (intervalul de timp de la terminarea VWP până la însămânțarea fecundă). S-a constatat că incidența infecțiilor uterine a fost semnificativ mai mare ($p < 0,05$) la vacile din rasa Holstein-Friză (64,3%), comparativ cu vacile din rasa Fleckvieh (41,3%). Indicele de însămânțare a fost semnificativ mai mic ($p < 0,05$) la vacile fără infecții uterine (1,9), comparativ cu vacile cu infecții uterine (2,5). Durata medie a repausului uterin a fost semnificativ mai mică ($p < 0,05$) la vacile sănătoase (114,7 zile), comparativ cu cele care au avut infecții uterine după fătare (182,2 zile). Se pare că vacile din rasa Fleckvieh sunt mai rezistente la condițiile de exploatare pentru producția de lapte, comparativ cu vacile din rasa Holstein-Friză.

Cuvinte cheie: vacă, indice de însămânțare, repaus uterin