

RESEARCHES REGARDING BEEF CATTLE PUERPERIUM SUPERVISION AND GUIDANCE IN A SATU-MARE COUNTY PRIVATE FARM

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Summary

The researches were carried out in a Satu-Mare county private farm during September 2005 and April 2006 on 36 puerperial cows (FLECKVIEH), divided into 4 plots. Before experiments, blood samples were randomly collected to accomplish the metabolic profile. For the first plot we administrated Prosolvin product (15 mg), for the second one EucaComp product (10% solution), for the third plot the Plantistim product (10% solution), plot 4 being kept as a control sample.

The individuals of the four plots were supervised regarding the puerperium evolution observing the quantity and quality of lochias secretions, uterine involution, ovarian activity recommencement as well as the first ovarian cycle apparition. Using $F_{2\alpha}$ prostaglandine, despite a quick corpus luteum regression and an early uterine involution, local puerperal affections were observed (4 cows, 50%). For in-uterine instillations the local puerperal infections were prevented, showing the efficiency of the products used. The use of these fitotherapeutical products for the puerperium control and supervision are in advantage as it regards the costs as well as the non-invasive activity and the lack of after-effect.

The puerperial period represents a border between physiological and pathological. Along this period there may appear some perturbations such as: puerperal infections, ovarian cysts, estrus perturbation, anestrus extension etc.(4, 5, 6, 7, 8).

All these causes represent a large instability and can be inhibited by environment and individual factors (2, 11). In this period self- protection and accommodation capacity of the organism is lower. Therewith can appear some complications such as: economic lost, service- period extension, diminution of fertilization, as well as the costs of the treatments.(1, 4-8).

Bovine reproduction means obtaining a calf from a cow every year (3, 10).The purpose was to found control methods and puerperium supervision at beef cattle.

We used hormonal protocols and natural products, administrated as in-uterine instillations.

Materials and methods

The researches were carried out in a Satu-Mare county private farm during September 2005 and April 2006 on 36 puerperial cows (FLECKVIEH), divided into 4 plots, the last being kept as a control sample. The first one had 8 cows, the

second had 10 cows, the third had 9 cows and the last had 9 cows. The incidence of puerperium disturbance in these farm was higher than 85%.

Before experiments, blood samples were randomly collected to accomplish the methabolic profile.

For the first plot we administrated one dose of prostaglandine (Prosolvin product) 2 ml (15 mg)/ animal i.m.

For the second plot we administrated EucaComp suspension (sweet marjoran 12,0 g, pot marigold - calendula officinalis -10,0 g, melissa 10,0 g, eucalyptus oil 0,5 g/100 g suspension) as in- uterine instillations. We accomplished 3 instillations using a semination device. The EucaComp solutions are bottled in 250 ml bottle, has no secondary effects.

For the third plot we administrated Plantastim product (100 ml attenuant product 10% like in- uterine instillations, 3 times/day, 3 days interval, beginning with the second day postpartum) made by Proplanta S.A. Plantastim product is concentrated suspension from plants (calendula alcoholic extract, lemon verbena, sweet marjoran, mint, eucalyptus oil).

The last plot was kept as a control sample was mentained in similar conditions feeding regime, no medication was applied, therefore the puerperal period developed naturally.

The individuals of the four plots were supervised regarding the puerperium evolution observing the quantity and quality of lochial secretions, uterine involution, ovarian activity recommencement as well as the first ovarian cycle apparition.

Results and discussions

For each plot the results were the following:

For plot 1, 4 cows (50%) had physiologic puerperium and the first estral cycle at 35- 42 days after parturition. The others had a pathologic puerperium and the ovarian activity recommence at 75 days after parturition.

Tabel 1

Puerperium evolution at first plot

| No | Registration | Age | Date of calving | Puerperium | Diagnosis | First estral cycle (days) |
|----|--------------|-----|-----------------|---------------|----------------------------|---------------------------|
| 1 | 5650 | 3 | 15.09.05 | Physiological | Clinical healthy | 35 |
| 2 | 5600 | 4 | 16.06.05 | Pathological | Muco-purulent endometritis | - |
| 3 | 5477 | 3 | 17.09.05 | Pathological | Muco-purulent endometritis | - |
| 4 | 5596 | 5 | 09.12.05 | Physiological | Clinical healthy | 40 |
| 5 | 5651 | 4 | 10.12.05 | Physiological | Clinical healthy | 42 |
| 6 | 5722 | 6 | 11.12.05 | Pathological | Puerperal endometritis | - |

| | | | | | | |
|---|------|---|----------|---------------|------------------------|----|
| 7 | 5332 | 3 | 14.04.06 | Physiological | Clinical healthy | 39 |
| 8 | 5658 | 3 | 16.04.06 | Pathological | Puerperal endometritis | - |

In plot 2, 7 cows (70%) had a physiologic puerperium, first estral cycle at 31- 41 days and 3 cows developed pathologic puerperium.

Tabel 2

Puerperium evolution at second plot

| No | Registration | Age | Date of calving | Puerperium | Diagnoses | First estral cycle(days) |
|----|--------------|-----|-----------------|---------------|--------------------------|--------------------------|
| 1 | 5325 | 5 | 24.09.05 | Physiological | Clinical healthy | 31 |
| 2 | 5499 | 3 | 26.09.05 | Physiological | Clinical healthy | 35 |
| 3 | 5139 | 7 | 27.09.05 | Physiological | Clinical healthy | 37 |
| 4 | 5620 | 4 | 04.01.06 | Pathological | Puerperal endometritis | - |
| 5 | 5758 | 3 | 06.01.06 | Physiological | Clinical healthy | 32 |
| 6 | 5402 | 5 | 07.01.06 | Pathological | Muco-purent endometritis | - |
| 7 | 5409 | 3 | 11.04.06 | Physiological | Clinical healthy | 41 |
| 8 | 5429 | 6 | 12.04.06 | Physiological | Clinical healthy | 33 |
| 9 | 5405 | 6 | 15.04.06 | Physiological | Clinical healthy | 34 |
| 10 | 5645 | 8 | 17.04.06 | Pathological | Puerperal endometritis | - |

In plot 3, five cows (66.66%) had a physiological puerperium and the first estral cycle at 39.5 days.

Tabel 3

Puerperium evolution in plot III

| No | Registration | Age | Date of calving | Puerperium | Diagnoses | First estral cycle (days) |
|----|--------------|-----|-----------------|---------------|-----------------------------|---------------------------|
| 1 | 5170 | 3 | 21.10.05 | Pathological | Puerperal endometritis | - |
| 2 | 5718 | 3 | 22.10.05 | Physiological | Clinical healthy | 32 |
| 3 | 5529 | 4 | 23.10.05 | Physiological | Clinical healthy | 39 |
| 4 | 5725 | 5 | 11.01.06 | Physiological | Clinical healthy | 41 |
| 5 | 5101 | 3 | 12.01.06 | Pathological | Muco-purulent endometritis | - |
| 6 | 5516 | 6 | 14.01.06 | Physiological | Clinical healthy | 37 |
| 7 | 5783 | 4 | 24.03.06 | Pathological | Occult chronic endometritis | 44 |
| 8 | 5552 | 4 | 25.03.06 | Physiological | Clinical healthy | 35 |
| 9 | 5661 | 6 | 27.03.06 | Physiological | Clinical healthy | 34 |

In plot IV, 3 cows (44.44%) had a physiological puerperium and the first estral cycle at 40.6 days.

Tabel 4

Puerperium evolution at IV plot

| No | Registration | Age | Date of calving | Puerperium | Diagnoses | First estral cycle (days) |
|----|--------------|-----|-----------------|---------------|-----------------------------------|---------------------------|
| 1 | 5764 | 5 | 12.11.05 | Pathological | Occult chronic endometritis | 45 |
| 2 | 5194 | 4 | 14.11.05 | Physiological | Clinical healthy | 35 |
| 3 | 5487 | 5 | 15.11.05 | Pathological | Purulent endometritis | - |
| 4 | 5410 | 3 | 10.01.06 | Pathological | Muco-purulent endometritis | - |
| 5 | 5656 | 3 | 13.01.06 | Physiological | Clinical healthy | 37 |
| 6 | 5729 | 4 | 14.01.06 | Pathological | Purulent endometritis | - |
| 7 | 5731 | 4 | 24.03.06 | Pathological | Complicated purulent endometritis | - |
| 8 | 5555 | 5 | 26.03.06 | Physiological | Clinical healthy | 42 |
| 9 | 5691 | 6 | 29.03.06 | Physiological | Clinical healthy | 39 |

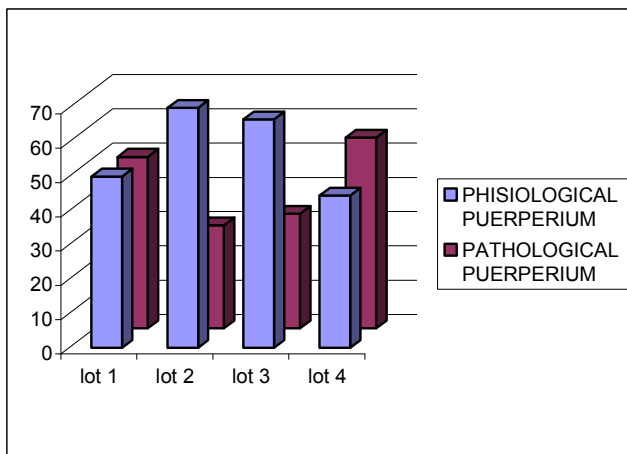


Chart : Comparative evolution of the puerperium in the four plots

After blood sample exam we observed:

| Registration | Puerp | Glycemia mg/dl | Ureea dlmg/ | Anorg. phosph mg/dl | Ca mg/dl | Mg mg/dl | Fe μg/ dl | Total prot g/dl | Albu m g/dl | γglobul. g/dl | Phospholi p. mg/dl | Triglic mg/dl | Colest mg/dl. |
|--------------|-------|-------------------|----------------|---------------------------|-------------|-------------|-----------------|-----------------------|-------------------|------------------|-----------------------|------------------|------------------|
| 5650 | F.p | 30 | 15,9 | 7,82 | 10,25 | 1,88 | 61 | 6,25 | 2,37 | 1,82 | 170 | 14,3 | 40 |
| 5477 | P.p | 43 | 19,5 | 5,52 | 9,92 | 2,54 | 65 | 7,17 | 2,17 | 2,18 | 104 | 42 | 23 |
| 5651 | F.p | 42 | 17,1 | 6,11 | 9,76 | 1,94 | 45 | 7,96 | 2,00 | 1,96 | 155 | 14,3 | 61 |
| 5332 | F.p | 35 | 14,6 | 5,58 | 9,94 | 2,44 | 54 | 7,85 | 2,06 | 2,38 | 114 | 19 | 40 |
| 5325 | F.p | 36 | 26,8 | 5,73 | 9,04 | 1,98 | 50 | 9,22 | 1,9 | 2,52 | 148 | 23 | 37 |
| 5139 | F.p | 37 | 11,0 | 5,12 | 9,84 | 2,28 | 59 | 7,5 | 2,16 | 2,38 | 146 | 10 | 53 |
| 5758 | F.p | 34 | 26,8 | 8,35 | 9,01 | 2,00 | 83 | 8,26 | 2,3 | 2,44 | 156 | 64 | 61 |
| 5402 | F.p | 42 | 26,8 | 5,64 | 9,74 | 2,66 | 57 | 8,93 | 2,32 | 2,24 | 155 | 49 | 54 |
| 5170 | P.p | 47 | 29,3 | 7,35 | 9,91 | 1,96 | 34 | 9,28 | 1,99 | 3,34 | 134 | 21,5 | 49 |
| 5725 | F.p | 34 | 25,6 | 8,83 | 9,04 | 2,54 | 39 | 7,55 | 2,49 | 1,94 | 158 | 10,1 | 46 |
| 5101 | P.p | 50 | 25,6 | 8,18 | 9,94 | 2,43 | 92 | 9,01 | 2,3 | 2,53 | 128 | 49,2 | 43 |
| 5783 | P.p | 38 | 28,0 | 7,17 | 10,64 | 1,59 | 35 | 8,5 | 2,15 | 1,98 | 148 | 24,6 | 50 |
| 5194 | F.p | 36 | 29,3 | 8,21 | 11,07 | 2,08 | 65 | 8,06 | 2,27 | 2,55 | 136 | 65 | 67 |
| 5410 | P.p | 35 | 32,9 | 5,52 | 11,12 | 1,85 | 94 | 8,87 | 2,39 | 3,06 | 137 | 51 | 61 |
| 5729 | P.p | 42 | 30,0 | 5,07 | 11,59 | 2,27 | 64 | 7,74 | 2,35 | 2,22 | 141 | 47 | 73 |
| 5555 | F.p | 42 | 26,4 | 7,56 | 10,28 | 1,96 | 61 | 7,7 | 2,3 | 2,05 | 162 | 37 | 59 |

The confrontation of the reference values to the results obtained by laboratory methods for the investigated hematological parameters, one may highlight the fact that in most of the examined samples the glycemia had decreased values (87,5%), confirming the bibliography, wherein it is show that the puerperal cows develop a negative energetically balance, especially during the early puerperium, due to the low food sugars input parallel to the appetite decrease, as well as to the increase of sugar needs for lactation maintenance.

The inorganic phosphorus describes high values in 50% of the individuals, due to its mobilization during the early puerperium, along with Calcium. Blood Magnesium showed increased values in 31.25% of the samples.

The level of total protein values there was identified a global increase, compared to the reference values, probably due to haemoconcentration. Albumins, γ - globulins and the phospholipids showed no significant fluctuations. 25% of the samples showed increase values compare to bibliography. Blood Colesterol samples (52%25) showed decreased values compare to bibliography.

Conclusions:

1. Applying the supervision and control protocols, one may prevent an entire series of puerperal disorders which would result in significant economic losses;
2. The use of $\text{PgF}_{2\alpha}$, despite a quick CL regression along to an earlier uterine involution debut, located puerperal lesions in a higher percent, compared to the plots that received uterine lavages;
3. The use of EicaComp and Plantistim lavages resulted in the prevention of located puerperal lessions, showing the efficiency of plant extracts for puerperal disorders prophylaxis;
4. For plots II & III, which received intrauterine lavages, first post partum estrus was observed sooner due to the maintenance and the increase of endometrial self defense as well as due to its $\text{PgF}_{2\alpha}$, secretion capacity;
5. The use of fittherapeutic products for the puerperium control and supervision present advantages referring both to the costs as well as to their uninvasive actions along with the lack of their tissue and milk remanence.

References

1. **Allen M. S.**, 2000, Effects of diet on short-term regulation of feed intake by lactating dairy cattle, J.Dairy Sci.83:1598-1624;
2. **Bogdan L. M.**, 2001, Reproducție, obstetrică, terapie și însămânțări artificiale la animale, Ed. Academic Press, Cluj- Napoca;
3. **Boitor I.**, 1979, Endocrinologia reproducției la animale de fermă, Ed. Ceres, București;

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4. **Groza I.**, 1996, Actualități și perspective în biotehnologia transferului de embrioni la specia ovină, Ed. Ceres, București;
5. **Groza I., M. Muntean**, 2002, Elemente de fiziologia reproducției la animale, Ed. Academic Press, Cluj- Napoca;
6. **Groza I., GH. Răpunțean, V. Miclăuș, L. Ognean**, 2002, Researches concerning the histochemistry and microbial flora of the puerperal uterus in cows, JCEA, Vol.3.pag.73-82;
7. **Groza I., I. Morar**, 2004, Andrologie veterinară, Ed. Gryphon, București;
8. **Groza I.**, 2006, Ginecologie, andrologie, și obstetrică veterinară compendiu, Ed. Academiei Române, București;
9. **Kadar L.**, 2002, Investigații biochimice în laboratorul clinic veterinar, Ed. Academic Press, Cluj-Napoca;
10. **Risco C.A.**, 2004, Managing the postpartum cow to maximize pregnancy ratea, Proceeding 2004 Florida Dairy Repr.Road Show;
11. **Stefan J., S.T. Chaffaux, F. Bost**, 1990, Role des prostaglandines au cours du postpartum chez la vache.Perspectives therapeutique, Rec. Med.Ved., 166, 13-20.