

## HORMONAL TREATMENT TO PREVENT THE RESIDUE OF PLACENTA IN COWS

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### ABSTRACT

*Excreting of fetal remains (placenta) after calving (born of the fetus) is a physiological process that consists in the loss of the relationship between parent and fetus. Excreting the placenta generally occurs about 6-12 hours after born of the fetus. Remain of the placenta after 24 hours after the fetal born, the diagnosis is the residue of the placenta. According to some researchers the incidence of residual placenta ranges from 4-16%, but can be higher on farms with problems. In accordance with these problems, we start up this study, to clarify the role of hormonal treatment on the process of excreting the placenta in cows. For this purpose, we formed three groups with 10 cows each. Two experimental groups were treated as follows: The first group got 30 UI oxytocin + 50 ml Calcium Gluconat. Time of treatment: immediately after post partum. The second group got 2 ml PGF 2 alpha (Clorprostenole) + 50 ml Calcium Gluconat. Time of treatment: immediately after post partum. While the control group (10 cows) received no special treatment. The results obtained from this study indicate that the combination of oxytocin together with Calcium Gluconat, 2 out of 10 cows treated have residue of placenta (20%), from the combination of PGF 2 alpha together with Calcium Gluconat, 4 out of 10 cows treated have residue of the placenta and after 24 hours of treatment (40%), whereas in the control group it appears that 4 out of 10 surveyed cows have residue of placenta (40%). So, the combination of the oxytocin together with Calcium Gluconat is more effective.*

### INTRODUCTION

Excreting of fetal remains (placenta) after calving (born of the fetus) is a physiological process that consists in the loss of the relationship between parent and fetus. As a result of these changes are the contractions of the uterus (miometer) that make it possible to extract the placenta out. Separation of fetal peeling from the womb is a complex process and depends on factors such as; immunological factors, inflammatory, microbial, food, etc. (Davies et al., 2004). The excreting of the placenta generally occurs about 6-12 hours after post partum of the fetus. Remain of the placenta after 24 hours after the fetal born, the diagnosis is the residue of the placenta. According to some researchers the incidence of residual of placenta range from 4-16%, but can be higher on farms with problems. Absence of separation of the placenta from the uterus seems to be the inability of the immune system to promote reduction of the volume of placentomave after the release of the fetus. Davies and his collaborators have published some of their results from their studies showing that the immune system is precisely the main reason of not excreting the placenta. In the cows placentoma where the separation is normal it is found a chemical factor for leukocytes. Otherwise, this factor is not found in cow's placentoma with residue of placenta. In these group leukocytes and neutrophils are less responsive compared to the first one. It is also important to note that the absence of uterine contractions after the release of fetal has hormonal and metabolic character. According to the author Franzer (2005), the uterus continues the contraction until 24 hours after post partum. There is a strong link between metabolic status and residual placenta in

cows. Cows with a negative energy balance during pre partum, possibility of residual placenta goes up to 80% of cows. Cows with a lack of vitamin E are the most vulnerable to waste of placenta (LeBlanc et al., 2004, 2008). As a result of residue of placenta, the uterus becomes the object of attacks and the development of pathogenic micro infections post partum (endometrite and metrite). In conclusion of this part, the main factors that lead the residue of the placenta in cows are: immunological factor, food factor (Ca ++, Vitamin E, glucose, etc.), microbial factor, way of parturition nature of calving (premature, prolonged, with intervention or normal) and hormonal factors (oxitocin and PGF 2 alpha), etc.

## **MATERIAL AND METHOD**

Methodology of the study was realized based on methodical general aspects, in methodological aspects of animal groups and their treatments, as well as methodological aspects of the collection and evaluation of experimental results.

### General methodic aspects.

For the study were used 30 cows (divided into three groups of 10 heads) two experiment groups and a control group. Cows were gathered without the race and age selection. Cows are mainly Simmental, Holstein and an indigenous race Busha. Cows were kept under control during the last part of calving and mainly after beginning of calving. After clinical calving progress we took notes: race, age, nature of calving, if there has been previous residue of placenta, the nature of the treatment, time of excretion of placenta after treatment and determination of the diagnosis for residue or not of placenta.

Methodical aspects of animal treatment groups:

As mention above, certain cows according to the principle of causality were divided into three groups, two experiment and added control. The first group of experiment (10 cows) were dealt with; UI 30 Oxitocine + 50 ml Gluconat Calcium. Injecting way I / V (intravenous). Time of treatment: immediately after the post partum. The second group of experiment (10 cows) were treated; 2 ml PGF 2 alpha (Clorprostenole) I / M (intramuscular) + 50 ml Gluconat Calcium. I / V (intravenous). Time of treatment: immediately after post partum. While the control group (10 cows) received no special treatment.

Methodological aspects of collecting and evaluating the results.

Collection of results is made through clinical observation and determining the time of the following occurrences:

1. Time of the beginning of partum after insemination (time of pregnancy).
2. Nature of calving (normal or not).
3. Extension of the third phase of calving (time of placenta excretion after calving).

Evaluation of results is done by comparing the ratios obtained through clinical observation to average values of each group. Results obtained are subjected to statistical processing with the method of analysis of variance, correlative connections and the net regression.

## **RESULTS AND DISCUSSIONS**

In order to make the study we formed two experiment groups and a control one. Cows are of different races predominantly Simmental and Holstein breed. Breeding is mainly cow stall, but with the possibility of daily output for motion. Hormonal treatment combined with Calcium gluconate has been targeted keeping in tonus of the uterus after the release of the fetus. Results of the study have focused on collecting data on race, age, the nature of calving, time of the placenta excretion after treatment. It should be noted that

the treatment (Oxitocine, Gluconat Calcium and PGF 2 alpha) is carried out immediately after calving. The data collected are as follows:

Experiment group treated with PGF2 alfa + Calcium Gluconat.

**Table 1**

**Results of the first group (PGF2 alfa + Calcium Gluconat).**

| No | Race  | Age | No. Of calving | Way of calving | Previously MSH | Treatment | Time of exit (hour) | SH | Observe  |
|----|-------|-----|----------------|----------------|----------------|-----------|---------------------|----|----------|
| 1  | Sim   | 6   | 4              | normal         | -              | PGF 2 +   | 3                   |    | Negativ  |
| 2  | Sim   | 10  | 6              | normal         | 2              | PGF 2 +   | > 24                |    | Positive |
| 3  | Sim   | 6   | 4              | normal         | -              | PGF 2 +   | 4                   |    | Negativ  |
| 4  | Sim   | 8   | 5              | hard           | 1              | PGF 2 +   | > 24                |    | Positive |
| 5  | Sim   | 5   | 3              | < 270          | -              | PGF 2 +   | > 24                |    | Positive |
| 6  | Sim   | 7   | 3              | normal         | -              | PGF 2 +   | 6                   |    | Negativ  |
| 7  | Sim   | 7   | 4              | normal         | 1              | PGF 2 +   | 4                   |    | Negativ  |
| 8  | Hol   | 8   | 5              | normal         | 1              | PGF 2 +   | > 24                |    | Positive |
| 9  | Hol   | 7   | 4              | normal         | -              | PGF 2 +   | 3                   |    | Negativ  |
| 10 | Busha | 8   | 5              | normal         | -              | PGF 2 +   | 2                   |    | Negativ  |

From the data shown in the table is worthy analyzing some indication as scientific discussion. Using the above preparations is as follows: PGF 2 Alfa is a hormone produced by endometrial several hours prior to calving and continues for several hours after that. Its main effect is the contraction of muscles of the uterus to extract fluid, the fetus and placenta out. Ca ++ on the other hand, is an important "mediator" by promoting uterine contractions. Since the beginning is worth to mention, the most notable result obtained from cows in the study is the high percentage of the remaining of the placenta 40% in the cows treated.

This data tell us that the cows who took place in the study, we believe that they suffer from various privations which leading to the residue of placenta. Meanwhile, if we analyze the data, such as age, nature of previous calving and placenta residue we find some "relaxing" arguments of initial viewpoint. The average age of the cows in the experiment ranged from 5 to 10 years (average over 7 years). We think that this is an age of high utilization of cows and also predisposing to placenta residue. Also two of cows with placenta residue had abnormal calving, that may have affected to the placenta residue (number 4 and 5).

If we continue analyzing the results we find out another interesting fact, where the four cows with placenta residue three of them have had this pathology in previous calving. Some scientist believes that placenta residue has a tendency to heritage. The combined treatment we applied to this group aimed at keeping the tonus of the uterus after calving. Apparently the degree of influence over these processes has not brought the desired results.

Despite these results with support of the foreign studies that refer to this treatment scheme, we believe that this scheme can be applied as a preventive measure of the placenta residue. Perhaps before using it should be assessed the status of the cow and in accordance with this we calculate the treatment dose especially when use Calcium Gluconate.

**The experiment group treated with oxitocin + Calcium gluconate.**

During the study we created a second group of experiment and combination treatment with 30 UI oxitocin + 50 ml Calcium gluconate. This task was carried out

simultaneously with the first and had the same purpose, preventing residue of placenta in cows. This group also consists of 10 Simmental cattle breeds (6) and Holstein (4). General data are presented in Table 2 of the study.

**Table 2**

**Results of the second group (oxitocin + Calcium gluconate).**

| No | Race | Age | No. Of calving | Way of calving | Previously MSH | Treatment | Time of exit SH (hour) | Observe  |
|----|------|-----|----------------|----------------|----------------|-----------|------------------------|----------|
| 1  | Sim  | 8   | 5              | Normal         | 1              | Ox + Ca++ | > 24                   | Positive |
| 2  | Sim  | 4   | 2              | Normal         | -              | Ox + Ca++ | 4                      | Negative |
| 3  | Sim  | 5   | 2              | Normal         | -              | Ox + Ca++ | 6                      | Negative |
| 4  | Sim  | 6   | 3              | Hard           | -              | Ox + Ca++ | 2                      | Negative |
| 5  | Sim  | 4   | 2              | Normal         | -              | Ox + Ca++ | 3                      | Negative |
| 6  | Sim  | 5   | 3              | Normal         | -              | Ox + Ca++ | 3                      | Negative |
| 7  | Hol  | 12  | 6              | Normal         | 2              | Ox + Ca++ | 3                      | Negative |
| 8  | Hol  | 8   | 6              | Normal         | -              | Ox + Ca++ | 3                      | Negative |
| 9  | Hol  | 7   | 3              | Normal         | 1              | Ox + Ca++ | 6                      | Negative |
| 10 | Hol  | 3   | 1              | < 270          | -              | Ox + Ca++ | > 24                   | Positive |

The result of the analysis and their discussion for the second group of the experiment seems to have other data. The scheme of treatment is a combination of oxitocin (30 UI) with 50 ml Calcium gluconate. The role of oxitocin is known for some effects of which goes to highlight its abilities on smooth muscles in general and uterus in particular. It is proved that calving process has emphasized hormonal character. One of these hormones is oxitocin which is released during the second phase of calving (born of the fetus). The mass production of oxytocin is produced by hypothalamus, but also and the yellow body during his fusion.

The level of oxytocin in circulation is needed for several hours more after the calving. This helps the uterus to excrete the placenta out.

Effects of Ca ++ are synergistic with those of oxitocin. The first data from the table show us that the rate of residual placenta in this group is 20%. Two of the cows had placenta residue after the treatment, when one of them had early calving (10). We think that the result obtained is comparable with other author. Age of cows in this group is averaged over 6 years (from 3-12 years). It is obvious that eight cows with no residue of placenta had completed the third stage of calving in less than 6 hours (3.7 + -1).

We think that the role of oxitocin and Ca ++ impacted positively together in this process. Using the intravenous route may be an additional argument. If we compare the frequency of the placenta residue between the two races we see no difference (P <0.05 level).

For the study we used a control group with 10 cows, and there was no treatment during calving.

The data obtained from this group are presented in Table 3 of the study. From the analyzing of the results of the control group we note that the rate of placenta residue is 40%. In this group we have more Simmental race than Holstein (9/1).

With one exception of cow no.5 which had early calving others held normal calving. The average age of cows in this group is 6.4 years. It should be emphasized that four cows had had previous placenta residue from 1 to 2 times.

**Table 3**

**The results of control group**

| No | Race | Age | No. Of calving | Way of calving | Previously MSH | Treatment | Time of exit SH (hour) | Observe  |
|----|------|-----|----------------|----------------|----------------|-----------|------------------------|----------|
| 1  | Sim  | 6   | 3              | Normal         | -              | -         | > 24                   | Positive |
| 2  | Sim  | 8   | 4              | Normal         | 1              | -         | 3                      | Negative |
| 3  | Sim  | 4   | 2              | Normal         | -              | -         | 3                      | Negative |
| 4  | Sim  | 7   | 4              | Hard           | 2              | -         | > 24                   | Positive |
| 5  | Sim  | 6   | 4              | < 270          | -              | -         | 4                      | Negative |
| 6  | Sim  | 8   | 5              | Normal         | -              | -         | 5                      | Negative |
| 7  | Sim  | 4   | 2              | Normal         | -              | -         | 4                      | Negative |
| 8  | Sim  | 7   | 4              | Normal         | 1              | -         | 6                      | Negative |
| 9  | Sim  | 5   | 3              | Normal         | -              | -         | > 24                   | Positive |
| 10 | Hol  | 9   | 5              | Normal         | 2              | -         | > 24                   | Positive |

**CONCLUSIONS**

Analyzing the result of three groups we reach in some conclusions and endings.

1. From the combination of PGF 2 alpha with Gluconat Calcium 4 out of 10 cows manifested placenta residue and 24 hour after treatment (40%).
2. From the combination of oxytocin with Calcium Gluconat 2 out of 10 cows manifested placenta residue (20%).
3. In the control group it appears that 4 out of 10 surveyed cows have residue of placenta (40%).
4. We believe that the combination of oxytocin with Ca ++ is more preferred.

**Recommendations**

1. Cows in the area study have a high degree of placenta residue (20-40%).
2. The age of the cows in the study is over the normal average.
3. We believe that nutrition should be improved on farms in the study.
4. In cows with difficult cases of calving the doses of oxytocin can be added from 30 to 50 UI and Calcium Gluconat from 50 to 100 ml.

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