

Progesterone, luteinizing hormone, prolactin and pregnancy-associated glycoproteins during the first trimester of pregnancy in cattle





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Introduction

 During gestation, several hormones and proteins are secreted by the maternal and fetal endocrine system.

 The dialogue between corpus luteum and the conceptus is very important for a successful outcome of gestation.

 The hormones originating from the corpus luteum (e.g. P4) and ante pituitary gland (e.g. LH and PRL) are suspected to be directly or indirectly influenced by molecules expressed in the endometrium (PGF_{2α}) and trophoblast (e.g. IFN-tau, Placental Lactogen and PAGs).

 Bovine PAGs are expressed in the trophoblastic binucleate cells and released into the maternal circulation as early as Day 25 after conception (Perényi et al., 2002).

AIM

The aim of this study was to compare LH, PRL, PAG profiles in females classified according to the levels of high P4 or low P4 measured at Day 21 after AI.

Materials and Methods

- The experiment was carried out Holstein Friesian females (n=37) of mixed age and parity.
- The herd was retrospectively splitted into 2 groups: females having P4 levels lower than (8.74 ± 3.48 ng/mL) and females having concentrations higher than the mean (Group 1 and 2, respectively).
- Blood samples were collected in the coccygeal vein into tubes containing EDTA at Day 21, 30, 45, 60 and 80 after AI.
- Plasma P4, LH, PRL and PAG were determined by RIA techniques.

Results

Table 1. Mean (SD) hormones and proteins concentrations from Day 21 to Day 80 after AI.

Group 1

Day after AI	Concentration (mean ± SD) (ng/mL)				
	P4	LH	PRL	PAG-497	PAG-Pool
Day 21	6.26 ± 1.70	4.16 ± 1.26	27.24 ± 16.18	0.26 ± 0.16	0.19 ± 0.22
Day 30	8.18 ± 2.15	3.43 ± 1.00	24.18 ± 14.44	1.70 ± 0.63	4.37 ± 2.13
Day 45	6.57 ± 1.99	3.34 ± 1.27	26.89 ± 14.83	2.49 ± 0.92	4.02 ± 1.99
Day 60	5.60 ± 2.20	3.62 ± 1.33	27.31 ± 10.20	4.06 ± 1.88	6.10 ± 3.37
Day 80	5.86 ± 2.44	3.84 ± 1.29	24.38 ± 14.72	6.90 ± 3.75	16.26 ± 9.67

Group 2

Day after AI	Concentration (mean ± SD) (ng/mL)				
	P4	LH	PRL	PAG-497	PAG-Pool
Day 21	11.05 ± 3.76	3.80 ± 1.09	18.10 ± 4.17	0.20 ± 0.00	0.16 ± 0.02
Day 30	8.58 ± 2.44	3.45 ± 0.90	15.39 ± 9.98	1.99 ± 1.60	5.14 ± 3.29
Day 45	6.97 ± 2.80	3.09 ± 0.66	17.49 ± 10.54	3.67 ± 1.42	6.68 ± 4.94
Day 60	8.79 ± 2.34	2.83 ± 0.64	25.26 ± 9.89	5.40 ± 2.78	9.70 ± 6.37
Day 80	8.00 ± 4.12	3.28 ± 0.85	25.56 ± 12.99	10.21 ± 8.73	19.41 ± 12.13



In our population no pregnancy loss was observed in the low P4 group neither in the higher one.

Conclusion

Our preliminary results indicated that the levels of P4 at Day 21 after AI can be related with clear differences in concentration of analyzed molecules (P4, LH, PRL, and PAG) during the subsequent period (till Day 80).

References

- Perényi Z, Szenci O, Sulon J, Drion PV, Beckers JF, 2002: Comparison of the ability of three radioimmunoassays to detect pregnancy-associated glycoproteins in bovine plasma. *Reprod. Dom. Anim.* 37 100-104.