

**bPAG PROFILES IN RECIPIENT HEIFERS AFTER TRANSFER OF IVF AND
NUCLEAR TRANSFER EMBRYOS**

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Bovine pregnancy associated glycoproteins (bPAG) are secreted by trophoblast continuously throughout gestation with concentrations increasing from implantation to the end of pregnancy (Zoli et al., *Biol. Reprod.*, **46**, 83-92, 1992). Following the bPAG levels released after transfer of IVF and nuclear transfer (NT) embryos during pregnancy may be useful for prediction of fetal well-being and help to detect early placental abnormalities, embryonic mortality or abortion. The aim of this experiment was to determine bPAG levels in heifers bearing embryos and fetuses after non surgical transfer of two embryos produced in vitro (IVF) or by nuclear transfer.

IVF and transfer of these embryos were carried out in Denmark, NT and transfer of the cloned embryos were done in Belgium. Blood samples were collected weekly or twice monthly during pregnancy. A radioimmunoassay for bPAG was developed in the Belgian laboratory according to the method described by Zoli et al.

In the IVF group, no pregnancy loss occurred after day 42 and the calving rate was 64%. In the cloned group, 2 abortions occurred in mid pregnancy (days ≈80 and ≈180) and the calving rate was 21%. Data are shown in the table.

Table: concentrations (ng/ml; means ± SEM) of bPAG in single and twin pregnancies:

| Weeks after ET | IVF embryos giving | | NT embryos giving | |
|--------------------|--------------------|----------------|-------------------|----------------|
| | twins n=7 | singles n=7 | twin n=1 | singles n=7 |
| 3 | 3±0.3 | 2±0.2 | / | / |
| 5 | 7±0.8 | 3±0.5 | 2 | 2±0.3 |
| 7 | 9±0.9 | 5±1.2 | / | / |
| 8 | 10±0.9 | 7±1.5 | 7 | 5±0.3 |
| 12 | 28±2.2 | 21±2.6 | 18 | 10±2.9 |
| 26 | 128±21 | 73±16 | 456 | 79±12 |
| 29 | 157±21 | 108±28 | 730 | 119±29 |
| 32 | 209±38 | 148±33 | 630 | 204±51 |
| 35 | 223±25 | 137±28 | 360 | 252±60 |
| 36 | 242±45 | 168±40 | 348 | 248±59 |
| Peripartal week | 2264±380 | 1602±559 | 12350 | 5022±1789 |

Similar bPAG levels were observed in the IVF and NT groups, except around parturition where higher concentrations were found in the cloned group. Twin pregnancies originating from transfer of 2 IVF embryos had higher levels of PAG. Higher concentrations in the NT group during late pregnancy are probably the consequence of placental dystrophies; careful examination of the placenta showed the occurrence of major placental hypertrophy (n=2) associated with hydramnios (n=2) and hydatiform molar (n=1; peripartal bPAG value: 12350).

In conclusion, monitoring concentrations of bPAG during pregnancy following transfer of IVF or NT embryos may help to detect earlier placental abnormalities, embryonic mortality or abortion.