

INFLUENCE OF BST TREATMENT IN BOVINE OOCYTE RECOVERY AND EMBRYO PRODUCTION

INTRODUCTION

A large-scale OPU-IVF initiated in order to increase the number of animals and establish a new breed in Brazil. Somatotropin (BST-Boostin 500mg) was used aiming to increase the number of growing follicles. Therefore, the present study was proposed to evaluate the results of the utilization of this hormone.

MATERIALS AND METHODS

Animals

- * 54 Senepol donors split in 5 groups
- * 486 OPU - IVF sessions (9 procedures/donor)
- * 5 to 7 days of interval between aspirations on each donor
- * Total oocyte recovery = 7,647
- * Viable oocytes (GI+GII+GIII) = 5,719
- * Blastocysts = 1,954
- * Transferred embryos = 1,638

Somatotropin

- * BST was administered subcutaneously: 2ml of Boostin 500mg from the 2nd session onwards, with 12 to 14 day intervals, always during the OPU.
- * The BST was administered on the 2nd, 4th, 6th, and 8th OPU sessions; consistent action was expected on the 3rd, 5th, 7th and 9th sessions
- To statistical analysis 3 groups were designed:
 - * Control group: 1st and 2nd OPU (no BST administration)
 - * Group II: OPU on days 6 and 7 after BST administration
 - * Group III: OPU on days 12 and 14 after BST administration

Follicular Aspiration

- * OPUs occurred between 01/08/01 and 03/09/01 in Ariquemes, RO, Brazil
- * Ultrasound Aloka SSD 500 - 5 Mhz
- * Needle 18 G - 55 cm - 75 mm Hg
- * Medium OPU (PBS + 10 UI Heparin + 1% FCS)
- * Selection and transport (TCM 199 + Heparin + 10% FCS) - 34°C

In vitro Maturation

- * Evaluation of the oocyte quality (cumulus and cytoplasm)
- * IVM (TCM 199+10% FCS+0.5µg/mL FSH+50µg/mL LH+1µg/mL E₂)
- * 24 hours - 5% CO₂ in air - 38.5°C

In vitro Fertilization

- * Frozen-thawed semen
- * Motile sperm - Percoll gradients (45-90%)
- * Sperm concentration: 2 x 10⁶/mL
- * IVF (TALP + BSA + PHE + 10µg/mL heparin)
- * 5% CO₂ in air - 38.5°C - 10-12 hours

In vitro Culture

- * Medium CR2 + 10% FCS with granulosa monolayer
- * Feeding in D3 and D6
- * 5% CO₂ in air - 38,5°C
- * Embryo transfer (fresh - non-surgical), in D7, synchronized recipients

RESULTS

Group	Number of Donors	Replicate	Viable oocytes/donor	IVP embryo/donor
Control	54	2	9.52±0.22 ^c	3.25±0.13 ^{ab}
6-7 days	54	4	13.34±0.16 ^a	3.52±0.09 ^a
12-14 days	54	3	11.17±0.18 ^b	2.95±0.11 ^b

Different letters in column are significantly different by Student's test at P<0.05



INTERPRETATION

In one hand, viable oocytes/donor was statistically greater following the hormone administration. In the other hand, embryo production/donor were not significantly affected by treatments. Such results indicate that BST increases the recruitment of follicles, subsequently increasing the total and viable oocyte numbers. However, this effect is discrete when it comes to embryo production, possibly by interfering in oocyte quality. It worth to mention, that individual donor express variations that justifies BST treatments in some animals.

CONCLUSION

We conclude that the oocyte recovery increased with the BST administration, especially on the OPUs carried out 6 or 7 days after treatment; 12 to 14 days later the response was more discrete, indicating a residual effect. A increase in the knowledge of oocyte recruitment physiology may help to understand this variable individual response.