

## Effect of Two Methods of Sperm Cells Processing on Achieving Fecundity "*In Vitro*" in Sow Oocytes

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### SUMMARY

Considerable progress has been made in the *in vitro* production of pig embryos using improved methods for *in vitro* maturation (IVM) and fertilization (IVF). Variation among boars, ejaculates and IVF protocols used in different laboratories appears to influence the incidence of polyspermy (Revel F. *et al.*, 1995), after the first division that occurred in the zygote content within 48 hours of cultivation in the thermostat (Xu, X. *et al.*, 1996a).

To highlight the effect of the two methods of sperm processing in achieving fecundity "*in vitro*" on sow oocytes we have conducted two separate experiments: one consisted of placing together a group of cumulus-oocyte complex with processed sperm cells in Percoll concentration gradient, and the other consisted of a number of COC cultivated with processed sperm cells through swim-up procedure (J.J. Parrish *et al.*, 1989)

On the case of spermatozooids processing in Percoll concentration gradient, out of 92 COC used for *in vitro* fecundation, 13.04% of it had the first cleavages.

Only 6.90% of the zygotes had the first cleavages out of 58 COC used on *in vitro* fecundation, there were used processed spermatozooids by the method „swim-up”.

If we evaluate the results of *in vitro* fecundation, we see that from the total number of cumulus-oocyte complexes cultured in the fecundation medium only 10.7% suffer the first division.

If we compare the results on the effectiveness of the two methods of processing bull and boar sperm, we find that the use of Percoll gradient for choosing the most vigorous sperm cells and for their capacitation has a distinctively superior effect compared to the swimming competition procedure (swim-up).

### REFERENCES

1. Parrish, J.J., J.L. Susko-Parrish and N.L. First (1989). Capacitation of Bovine Sperm by Heparin: Inhibitory Effect of Glucose and Role of Intracellular pH. *Biology of Reproduction* 41, 683-699.
2. Revel, F., P. Mermillod, N. Peynot, J.P. Renard, and Y. Heyman. Low (1995). Low developmental capacity of *in vitro* matured and fertilized oocytes from calves compared with that of cows. *J. Reprod. Fertil.* 103:115–120.
3. Xu, X., J. Ding, P.C. Seth, D.S. Harbison, and G.R. Foxcroft. (1996a). *In vitro* fertilization of *in vitro* matured pig oocytes: Effects of boar and ejaculate fraction. *Theriogenology* 45:745–755.