

A Comparison between Pig Embryo Development in TALP and NCSU-23 Culture Media

Ileana MICLEA, Marius ZĂHAN, Florin GHIURU, Alexandru RUSU, Vasile MICLEA

University of Agricultural Sciences and Veterinary Medicine, Faculty of Animal Husbandry and Biotechnologies, 3-5 Mănăştur Street, 400372, Cluj-Napoca, Romania; ileanamiclea@yahoo.com

Keywords: swine embryo, TALP, NCSU-23

SUMMARY

It has been suggested that the in vitro culture systems for porcine embryos are not optimal, because in vitro matured and fertilized oocytes can develop to the blastocyst stage when they are placed in optimal circumstances such as suitable female reproductive tracts (Kashiwazaki and Shino, 2001). Several media and culture conditions have been created that allow embryo development in vitro such as the KSOM, modified Whittens medium or NCSU-23 (Brüssow et al., 2000). Our aim was to test this last one against a medium previously employed in our laboratory, the TALP (Tyrode, Albumin, Lactate, Pyruvate), originally used for fertilization. Pig oocytes were cultured for 45 hours at 38°C in 5% CO₂ atmosphere in M199 supplemented with 10 IU/ml Chorulon, 10 IU/ml Folligon, 10% foetal bovine serum, 100 µg/ml penicillin and 100 IU/ml streptomycin. Then they were fertilized in TALP medium using spermatozoa capacitated by 2 time centrifugation at 800 g for 10 minutes and incubated for 16-18 hours. Afterwards the presumed zygotes were cultured in either TALP or NCSU-23 for 92 hours at 38°C in 5% CO₂ atmosphere. The number of embryos to have reached the 2 cell, 4-8 cell and morula stages were counted and the results were analyzed by ANOVA. The embryo yield in the group cultured in TALP was significantly lower than in that cultured in NCSU-23, 13.14% out of the 175 fertilized oocytes having developed into embryos in the first instance as opposed to the 56.34% out of 213 that resulted in the second. The percentage of embryos that reached the 4-8 cell stage when cultured in NCSU-23 (20.66%) was higher and distinctly significant ($p < 0.01$) compared to the ones cultured in TALP (3.43%). The fact that NCSU-23 is more favourable to the development of swine embryos than TALP is further proven by the very significant percentage ($p < 0.001$) of embryos that reached the morula stage (20.66%) in the first case than in the second (2.28%). The percentage of embryos that progressed to the 2 cell stage in NCSU-23 was 15.02%, higher than the 7.43% that resulted for TALP but not statistically significant. The results of our experiment indicate that NCSU-23 is better suited to fulfil the needs of the porcine embryo than TALP.

REFERENCES

1. Kashiwazaki N. and M. Shino (2001). Ability of in vitro manipulated porcine embryos to develop to piglets. *J Reprod.Dev.* 47(Suppl):55–62.
2. Brüssow, K.P., H. Torner, W. Kanitz and J. Rátky (2000). In vitro technologies related to pig embryo transfer. *Reprod. Nutr. Dev.* 40:469–480.