

Isolation, characterization and microencapsulation of neonatal porcine Sertoli cells obtained from a specific pathogen free (SPF) herd

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Porcine Sertoli cells (pSC) have been successfully employed as cell therapy in pre-clinical studies of several immune-based and chronic degenerative diseases. In order to prevent any transmission of infectious adventitious agents to the cells graft recipients, we have set up, according to our previously described method (Luca et al., 2007) pSC monolayers obtained from specific pathogen free (SPF) certified neonatal pigs, born in the unique SPF colony in Italy. pSC were assessed and characterized as far as viability, by ethidium bromide and fluorescein diacetate (EB/FD), Müllerian inhibiting substance (AMH), and insulin-like 3 (INSL3), alpha-smooth muscle actin (ASMI) both by immunofluorescence (IF) and cytofluorimetric analysis (CA) were concerned. pSC were encapsulated in alginate microcapsules (MCpSC), with MCpSC functional competence and biocompatibility being determined both in vitro, by AMH, inhibin B, TGF-beta, IGF-I secretion and in vivo in experimental animal models, respectively. Results demonstrated the high purity of our pSC monolayers (95% of AMH+cells), with negligible contamination by Leydig (2%) and peritubular cells (3%). Microencapsulation did not alter pSC viability and even after 4 months post-implantation, all the retrieved microcapsules retained morphology and function. In conclusion, we have uniquely obtained, from a SPF herd, highly purified, viable and functional pSC that might potentially apply to humans.

References

- [1] Luca et al. (2007) Encapsulation, in vitro characterization, and in vivo biocompatibility of Sertoli cells in alginate-based microcapsules. *Tissue Eng* 13:641-648.

Keywords

Cell therapy, chronic diseases, microencapsulation.