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Sertoli Cells as potential Pharmaceutical Carriers: uptake and stability

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Sertoli cells (SC) have been used for their immunomodulatory properties in cell transplants (Emerich et al., 2003). Moreover, SC themselves may prevent immune rejection (Sipone et al., 2006) and possess a natural phagocytic activity: the latter may make them suitable as biocompatible drug delivery carriers. Porcine SC were loaded with PLA microspheres containing pharmaceutical agents (SC-MS). Phagocytosis was monitored over 24 hours; the uptake was measured by HPLC at fixed time points and followed up through 6 days. SC viability and morphology were monitored together with reactive oxygen species (ROS), DNA damage and parameters of SC functionality and immunomodulatory properties over time. A preliminary antibacterial activity was assessed *in vitro*. SC-MS were cryopreserved in liquid nitrogen and after plating underwent the same characterization. SC internalized drug loaded MS with an uptake rate of about 20% at 5 hours, that increased by 30% until day two. The uptake was stable up to 6 days with no differences in ROS, DNA damage, functional and immunomodulatory properties observed between control and loaded SC, even after cryopreservation/thawing. A spontaneous *in vitro* activity against pseudomonas strain, presented with SC alone, increased in presence of MS, and was maintained after cryoperservation. These results encourage further studies to understand the real potential of SC as drug delivery vehicles in trials in "*in vivo*" animal models.

References

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Key words
Sertoli cell, drug, delivery.