

Fetal tissue-derived stem cells may be ideal source for repairing tissues and organs

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Multipotent fetal dermal cells (MFDCs) may be an ideal source for cell therapy for repairing damaged tissues and organs. Their performance is superior to that of adult dermal cells, said a research team in Italy that developed a cell isolation technique for MFDCs and subsequently published a study that appears as an early e-publication for the journal *Cell Transplantation*.

"When compared to adult dermal cells, [fetal cells](#) display several advantages, including a greater cellular yield after isolation, the ability to proliferate longer, and the retention of differentiation potential," said study co-author Dr. C.M. Chinnici of the Fondazione Ri.MED, Regenerative Medicine and Biomedical Technologies Unit in Palermo, Italy. "Cells from fetal dermis have been proven safe and efficacious in the treatment of pediatric burns, but proper characterization of these cells has not yet been provided."

Their research provided a protocol for the isolation and expansion of large numbers of MFDCs that may see future clinical use, said the study authors.

"We generated, propagated and analyzed a proliferating population of cells derived from human fetal dermis taken at 20-22 weeks of gestation," wrote the researchers. "The non-enzymatic isolation technique allows for a spontaneous selection of cells with higher motility and yields a nearly homogeneous [cell population](#)."

The MFDCs, they reported, were "highly proliferative and were successfully expanded with no growth factor additions." They noted that, unlike mesenchymal [stem cells](#), which progressively lose their differentiation capacity, the MFDCs "retained their osteogenic and adipogenic differentiation potential" meaning that their potential impact for [cell transplantation](#) is likely to be greater.

"The MFDCs demonstrated their favorable characteristics for a potential large scale production aimed at clinical use," said Dr. Chinnici.

The researchers noted that the most interesting aspect of their study was the finding that [multipotent cells](#) can be successfully isolated from small fetal skin biopsies and maintained in culture for long periods with multipotency, stability and low immunogenicity retained, "thus generating large quantities of cells for clinical use."

"Given these results, the future prospect is to translate the concept of MFDCs as cells of therapeutic interest into experimental models of tissue regeneration," they concluded.

More information: Chinnici, C. M.; Amico, G.; Monti, M.; Motta, S.; Casalone, R.; Petri, S. L.; Spada, M.; Gridelli, B.; Conaldi, P. G. Isolation and Characterization of Multipotent Cells from Human Fetal Dermis. Cell Transplant. Appeared or available online: June 13, 2013 www.ingentaconnect.com/content...rints/ct1022chinnici

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