Cord blood-derived CD133+ cells improve cardiac function after myocardial infarction

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Researchers at the Pontifícia Universidade Católica do Paraná and Instituto Carlos Chagas have evaluated the therapeutic potential of purified and expanded CD133+ cells human umbilical cord blood (HUCB)-derived in treating myocardial infarction by intramyocardially injecting them into a rat model. Patients who have high cardiovascular risks have fewer endothelial progenitor cells (EPCs) and their EPCs exhibit greater in vitro senescence. HUCB-derived EPCs could be an alternative to rescue impaired stem cell function in the sick and elderly.

The results, which appear in the January 2010 issue of Experimental Biology and Medicine, show that expanded cells ex vivo exhibited increased expression of mature endothelial cells markers and formed tubule-like structures in vitro. Only the expanded cells expressed VEGF mRNA.

Cells were expanded up to 70-fold during 60 days of culture, and they retained their functional activity. A significant improvement was observed in left ventricular ejection fraction for purified and expanded cells. In summary, CD133+ cells were purified from HUCB, expanded in vitro without losing their biological activity, and both purified and expanded cells showed promising results for use in cellular cardiomyoplasty. However, further pre-clinical testing should be performed to determine whether expanded CD133+ cells have any clinical advantages over purified CD133+ cells.

Steven R. Goodman, Editor-in-Chief of Experimental Biology and Medicine said "This study suggests that the use of human umbilical cord blood-derived purified and expanded CD133+ cells may show promise for use in cellular cardiomyoplasty. This finding needs subsequent pre-clinical testing but may prove to be very important in future treatments".

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