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# 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

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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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