

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

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 on page 119 of this 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 preclinical testing should be performed to determine whether expanded

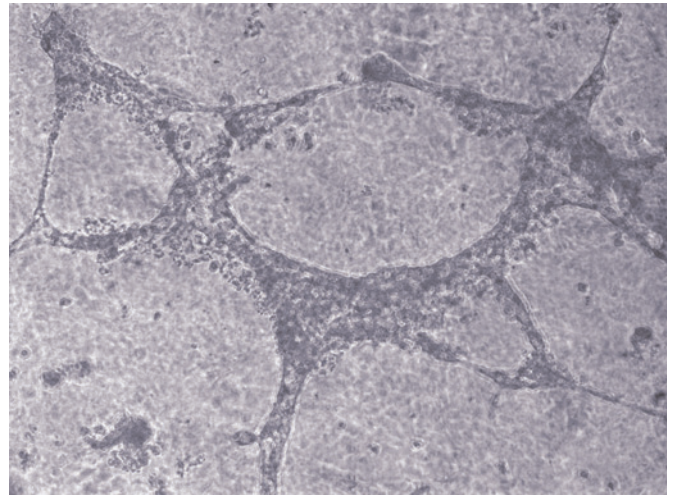


Figure 1 *In vitro* capillary tube formation by expanded CD133⁺ cells human umbilical cord blood-derived, after 24 hours ($\times 100$)

CD133⁺ cells have any clinical advantages over purified CD133⁺ cells (Figure 1).

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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