

Isolation and fabrication of NPCs derived from HUCB for the treatment of Parkinson's disease

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Umbilical cord and placenta, once considered medical waste are emerged to be a valuable source of stem cells. The cord blood stem cells show the potential to treat the fatal disease such as leukemia, cardiac attacks and debilitating disease including Alzheimer's and Parkinson's. Cord blood stem cells are also widely used in therapies such as blood disorders, bone and tissue engineering, dermatology etc.

Isolated NPCs are able to proliferate in response to basic fibroblast growth factor and when the culture conditions are altered means addition of BDNF and NT-3, they differentiate into several phenotypes of neurons. Fabricated PCL with 10% sucrose and 10% PEG 4000 scaffold shown good proliferation rate upto 14 days while PCL with 5% sucrose shown to promote good cells attachment and survival rate more than 21 days this may be due to pore size & pore number.

Intravenously transplanted NPCs can enter the mice brain with Parkinson disease, survive, migrate and improve functional recovery. Transplantation of human NPCs can be used to restore neurological deficits in experimental Parkinson disease.

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