

Estrogen Mediates Ischemic Damage and the Migration of Human Umbilical Cord Blood Cells

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Human umbilical cord blood cells(HUCBC) are rich in mesenchymal progenitor cells, endothelial cell precursors and hematopoietic cells. HUCBC have been used as a source of transplantable stem and progenitor cells. However, little is known about survival and development of HUCBC transplantation in the CNS. Estrogen has a neuroprotective potential against oxidative stress-induced cell death so has an effect on reducing infarct size of ischemic brain. We investigated the potential use of HUCBC as donor cells and tested whether estrogen mediates intravenously infused HUCBC enter and survive in ischemic brain. PKH26 labeled mononuclear fraction of HUCBC were injected into the tail vein of ischemic OVX rat brain with or without 17β -estradiol valerate(EV). Under fluorescence microscopy, labeled cells were observed in the brain section. Significantly more cells were found in the ischemic brain than in the non-ischemic brain. HUCBC transplanted into ischemic brain could migrate and survive. Some of cells have shown neuronal like cells in hippocampus, striatum and cortex tissues. These result suggest that estrogen reduces ischemic damage and increases the migration of human umbilical cord blood cells. This Study was supported by the Korea Science and Engineering Foundation(KOSEF) through the Biohealth Products Research Center(BPRC), Inje University, Korea.

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