# Intravenous Administration of Human Umbilical Cord Blood Reduces Neurological Deficit in the Rat After Traumatic Brain Injury

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**Abstract:**
We measured the effect of treatment of traumatic brain injury (TBI) in the rat with human umbilical cord blood (HUCB) administered IV. HUCB cells were injected into the tail vein 24 h after TBI and the rats were sacrificed at day 28 after the treatment. The Rotarod test and the neurological severity score (NSS) were used to evaluate neurological function. The distribution of the donor cells in the brain, heart, lung, kidney, liver, spleen, bone marrow, and muscle were analyzed in recipient rats using immunohistochemical staining and laser confocal microscopy. HUCB cells injected IV significantly reduced motor and neurological deficits compared with control groups by day 28 after the treatment. The cells preferentially entered the brain and migrated into the parenchyma of the injured brain and expressed the neuronal markers, NeuN and MAP-2, and the astrocytic marker, GFAP. Some HUCB cells integrated into the vascular walls within the boundary zone of the injured area. Our data suggest that IV administration of HUCB may be useful in the treatment of TBI.