

# Effect of triiodothyronine on remyelination enhancement after mesenchymal stem cell intraperitoneal injection in c57bl/6 mice cuprizone model of multiple sclerosis

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**D**ental pulpMethylprednisolone (MP), a glucocorticoid steroid, has an anti-inflammatory action and seems to inhibit the formation of oxygen free radicals produced during lipid peroxidation in a spinal cord injury (SCI). Currently MP is the standard therapy after acute SCI on reported neurological improvements. The combination therapeutic effect of human umbilical cord blood-derived mesenchymal stem cells (hUCB-MSCs) for transplantation time (1d, 7d, and 30d) after MP treatment on the axonal regeneration and on the behavioral improvement in SCI were studied in the rat. The spinal cord was injured by contusion using a weight-drop at the level of T9 and MP (30 mg/kg, i.m., 10 min and 4 h) was acutely administered after injury. hUCB-MSCs were labeled with GFP and our study performed the efficacy for transplantation time (1d, 7d, and 30

d) of hUCB-MSCs into the boundary zone of injured site. Efficacy was determined by histology, anterograde and retrograde tracing, and behavioral test. We found that hUCB-MSCs with MP treatment exerted a significant beneficial effect by neuroprotection and reducing cavity volume. Also the transplantation of hUCB-MSCs with MP treatment significantly improved functional recovery. Combined transplantation at 7d after SCI provided significantly greater efficiency than combined transplantation at 1d and 30d. These results suggest that transplantation time window of the hUCB-MSCs with MP treatment give rise to an earlier neuron protection strategy and effect of cell grafting in SCI. Thus our study may be considered as a therapeutic modality for SCI.

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