

# The Effects of the Recombinant Human HGF Over-expressing Mesenchymal Stem Cells on CCl<sub>4</sub>-Induced Liver Fibrosis in Rat

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**Purpose:** We manipulated and transplanted HGF overexpressing MSCs to investigate their therapeutic effects on carbon tetrachloride (CCl<sub>4</sub>) – induced liver fibrosis in a rat model.

**Materials and Methods:** In order to induce liver fibrosis, Carbon tetrachloride at 0.5ml/kg of body weight was injected intraperitoneally into Wistar rats twice weekly for 4 weeks, and blood samples were collected. We prepared HGF overexpressing MSCs using pMEX Expression System and HGF level was assessed by RT-PCR and ELISA. After undergoing liver fibrosis, the rats were received 2 x 10<sup>6</sup> the MSCs over-expressing HGF by injection into caudal vein, once a week for 3 weeks.

**Results:** Liver fibrosis rat model was successfully generated by biochemical analysis [The levels of liver enzyme penal and total bilirubin were significantly increased, whereas the levels of albumin, total protein and blood urea nitrate were decreased.] and histological analysis [The amount of fibrosis was determined by histology stained with Masson's trichrome.]. As the result of RT-PCR and ELISA, the level of HGF expression was significantly increased in MSCs carrying HGF-pMEX expression vector compared to that of control.

**Conclusion:** These findings suggest that MSCs overexpressing HGF more enhance liver regeneration as well as they may be potentially useful for the treatment of patient with liver fibrosis.

**Key words:** hepatocyte growth factor (HGF), mesenchymal stem cells (MSCs), liver fibrosis, carbon tetrachloride (CCl<sub>4</sub>), rat

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