



The efficiency of adipose-derived stem cell pretreated with hepatocyte growth factor and platelet rich plasma on a liver cirrhosis mouse model

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Abstract

Background: Because of their ease of isolation, high proliferation capacity *in vitro*, as well as their ability to differentiate into liver cells, Adipose-derived stem cell (ADSCs), are considered to be a promised candidate for liver disease treatment, including liver cirrhosis treatment. Recent studies show that hepatocyte growth factor (HGF) can stimulate ADSC to migrate to the injured areas and platelet rich plasma (PRP) can increase the stemness of ADSCs.

Method: In this study, we cultured ADSCs in the medium supplemented 20 ng/ml and 10% PRP; then transplanted them into the cirrhosis mouse model. After 11 weeks of CCl₄ induction (1ml/kg, three times per week), mice were divided into 3 groups: (1) PBS group which were injected 0.2 ml PBS; (2) ADSC group which were transplanted 5x10⁵ ADSCs non-pretreated with HGF and PRP; (3) ADSC/HGF+PRP group which were transplanted 5x10⁵ ADSCs pretreated with HGF and PRP via the tail vein. We evaluated the effectiveness of the therapeutic at the day 7th and 14th after transplantation.

Results: The results show that the transplantation of ADSC pretreated with HGF and PRP after seven days improves the body weight (increase 4.673%); decreases the ALT level ($p < 0.05$), the total leukocyte number ($p < 0.05$) and the expression of Pro-collagen (decrease 4.1 times) as well as α -SMA (decrease 5.1 times), in comparison to the ADSC group. ADSCs pretreated with HGF and PRP also help to improve the liver tissue structure.

Conclusion: The therapy using ADSCs pretreated with HGF and PRP is considered to be a promising therapy.

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Keywords

Adipose-derived stem cell, hepatocyte growth factor, platelet rich plasma, liver cirrhosis mouse model, transplantation

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