Establishment of dimethylnitrosamine (DMN) induced rat liver fibrosis model and effect of human mesenchymal stem cells from the bone marrow (hMSC) on the fibrosis model

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Purpose: This study was aimed to develop a DMN-induced liver fibrosis model in rats and to evaluate effects of hMSC on the model.

Methods: DMN was given i.p. to SD rats 3 times weekly for 4 weeks. hMSC was injected at the day after the last DMN treatment. Blood was collected once a week to perform blood biochemistry test. Liver was removed from week 3 to 6 to observe the content of fibrosis and to perform histopathological examination.

Results: DMN treated rats showed a progressive increase in plasma ASAT, ALAT, γ GT, Tbil and hyaluronan from week 1 to 4, a significant decrease in plasma Alb and a significant increase in plasma ALP, a significant increase in fibrosis area ratio and hydroxyproline of liver compared to the non-treatment rats. Histopathological examination indicated DMN induced inflammation and liver fibrosis from 3rd week after start of DMN treatment. Administration of hMSC did not affect the model rats under the present conditions.

Conclusion: A rat liver fibrosis model was developed under the present study conditions and the model can be reproduced consistently within a relatively short period of time and can be used to assess the drug efficacy of potential anti-fibrotic agents.