

Name of Journal: *World Journal of Gastroenterology*

Manuscript NO: 55373

Manuscript Type: REVIEW

Therapeutic efficiency of bone marrow-derived mesenchymal stem cells for liver fibrosis: A systematic review of *in vivo* studies

Zaid Al-Dhamin, Ling-Di Liu, Dong-Dong Li, Si-Yu Zhang, Shi-Ming Dong, Yue-Min Nan

Abstract

Although multiple drugs are accessible for recovering liver function in patients, none are considered efficient and liver transplantation is the mainstay therapy for end-stage liver fibrosis. However, the worldwide shortage of healthy liver donors, organ rejection, complex surgery, and high costs are prompting researchers to develop novel

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For direct infusion, cells such as primary hepatocytes, unsorted bone marrow cells (BMCs), **hematopoietic** stem cells (HSCs), and mesenchymal stem cells (MSCs) have all been used. Of these cell types, MSCs have been isolated by plastic adherence from adipose tissue, umbilical cord blood, peripheral blood, **brain, lung, liver, dermis and skeletal muscle (3 , 4 , 5)**.

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