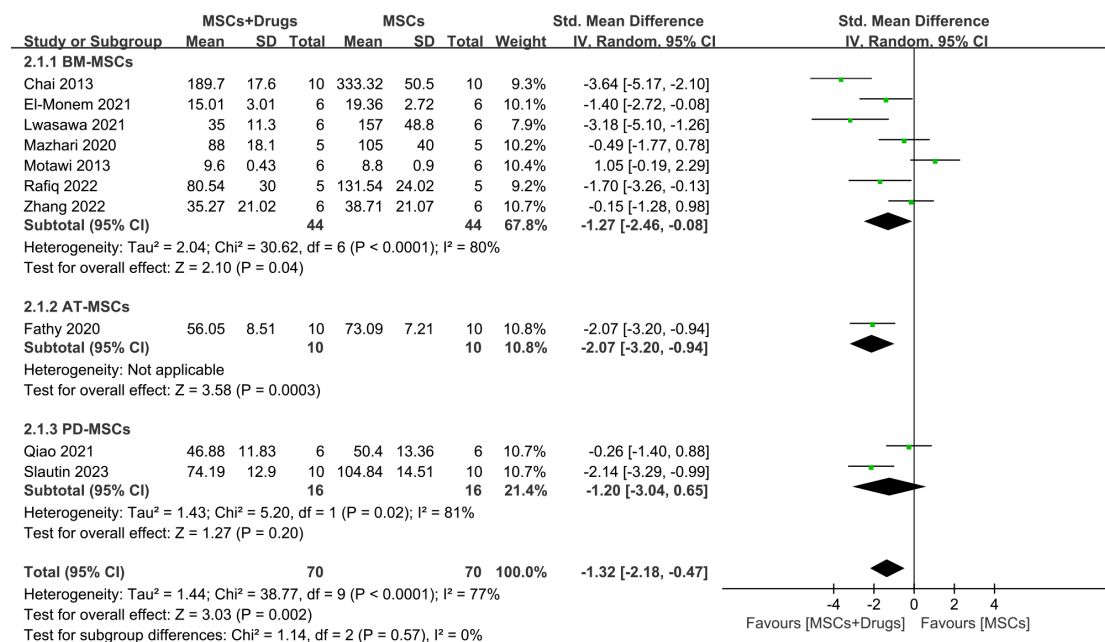
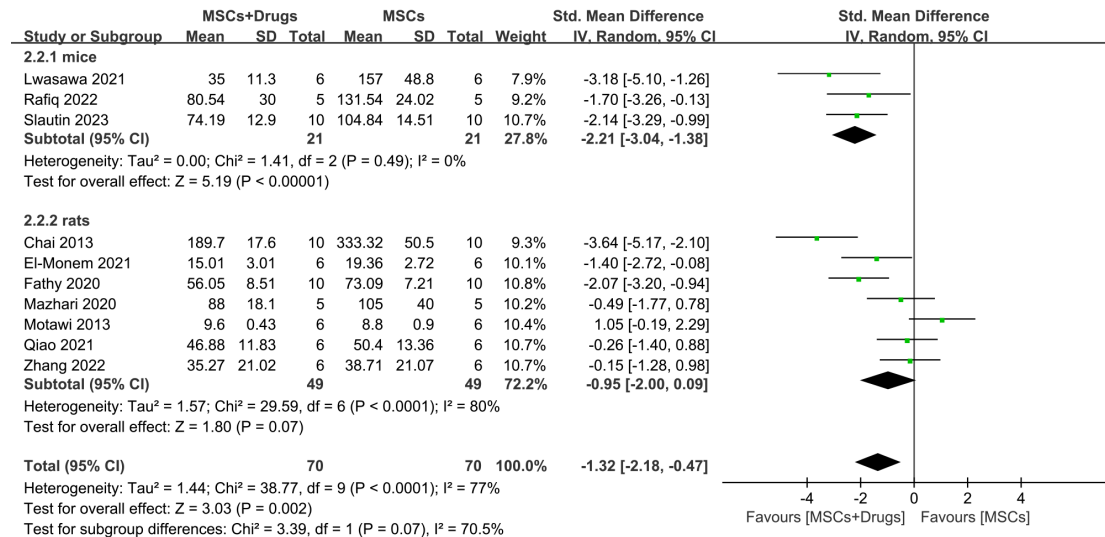


## Supplementary materials

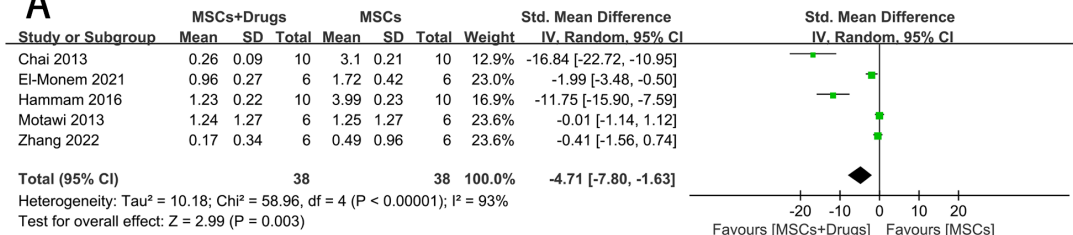


Supplementary Figure 1 The forest plots: MSCs source subgroups of ALT levels.

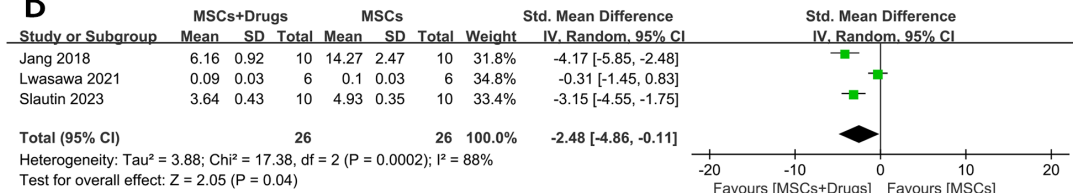


Supplementary Figure 2 The forest plots: Animal model subgroups of ALT levels.

**A**

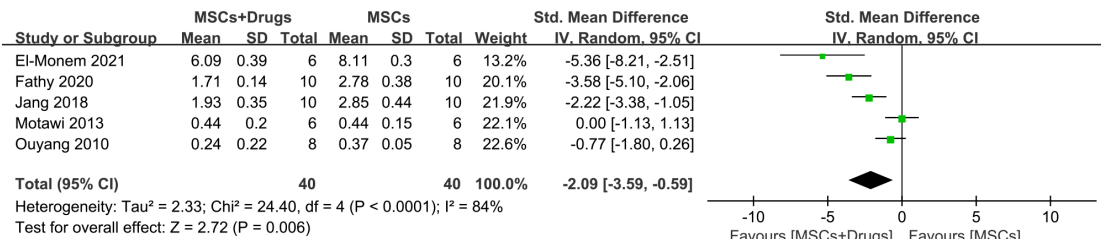


**B**

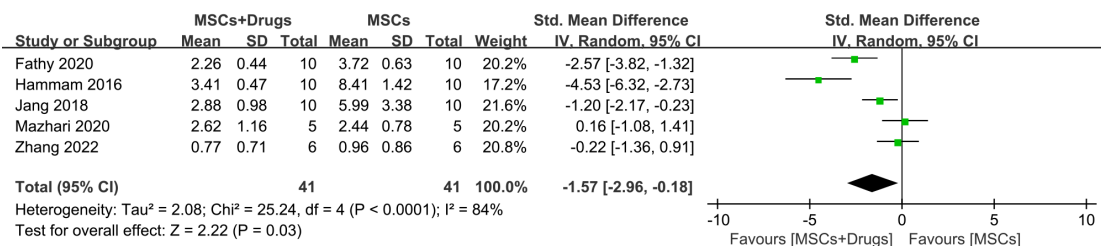


**Supplementary Figure 3: The forest plots: (A): Area percentage of levels (Masson**

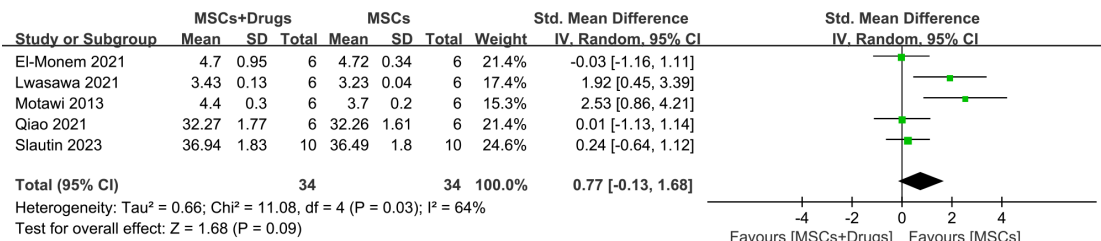
**staining); (B): collagen fibers Area percentage of collagen fibers of levels (Sirius red**



**Supplementary Figure 4 The forest plot of TGF-β1.**



**Supplementary Figure 5 The forest plot of α-SMA.**



**Supplementary Figure 6 The forest plot of ALB.**

**Supplementary Table 1 Summary of preclinical studies of mesenchymal stem cells combined with drug therapy for hepatic fibrosis**

Study	Year	Country	design	Species	Injure model	Type of MSCs	Cell dose	Delivery route	Combination Drugs	Drug dose	Available outcomes
Ouyang[17]	2010	China	RCT	SD rats	Porcine Serum	BM-MSCs	1×10 <sup>6</sup>	portal vein	Salidroside	7mg/kg	AST、ALP、TGF-β1、hydroxyproline
							cells/kg				
Chai [7]	2013	China	RCT	SD rats	CCL4	BM-MSCs	5×10 <sup>6</sup>	tail vein	Oxymatrine	50mg/kg	ALT、AST、IL-10、Masson
							cells/kg				
Motawi[22]	2013	Egypt	RCT	Wistar rats	CCL4	BM-MSCs	3×10 <sup>6</sup>	tail vein	Simvastatin	10mg/kg	ALT、AST、ALB、ALP、Col I、Col III、TGF-β1、Masson
							cells/kg				

Hammam[16]	2016	Japan	RCT	Albinomice	Schistosoma mansoni	WJMSCs	1.5	intrahepatic	Praziquantel	500mg/kg	$\alpha$ -SMA、Col I、MMP-9、Masson
							$\times 10^6$ cells/kg				
Jang[19]	2018	Korea	RCT	SD rats	TAA	BM-MSCs	1	intrahepatic	Simvastatin	10 mg/kg	$\alpha$ -SMA、TGF- $\beta$ 1、p-Smad3、Masson
							$\times 10^6$ cells/kg				
Fathy[13]	2020	Japan	RCT	SD rats	CCL4	AT-MSCs	9.75	tail vein	Eugenol	10 mg/kg	ALT、AST、IL-1 $\beta$ 、TNF- $\alpha$ 、IL-6、IL-10、 $\alpha$ -SMA、TGF- $\beta$ 1
							$\times 10^6$ cells/kg				
Mazhari[12]	2020	Lran	RCT	SD rats	CCL4	BM-MSCs	1.5	tail vein	Imatinib	20mg/kg	ALT、AST、ALP、Masson

							cells /kg				
El-Mone m[14]	20 21	Egy pt	RC T	Wistar rats	CCL4	BM- MSCs	1 ×10 <sup>7</sup>	tail vein	Nanocurc umin	100 mg/kg	ALT, AST, ALB, TGF-β1, Col I, Col III, MMP-2
							cells /kg				
Qiao[2 3]	20 21	Chi na	RC T	Wistar rats	CCL4	PD- MSCs	5×1 0 <sup>6</sup>	tail vein	Baicalin	25 mg/kg	ALT , AST , ALB , Hydroxyproline
							cells /kg				
Lwasa wa[20]	20 21	Jap an	RC T	C57BL /6 mice	CCL4	BM- MSCs	1 ×10 <sup>6</sup>	tail vein	Juzentaih oto	3 % (normal dose) or 1.5 % (low dose)	ALT, AST, ALB, Sirius Red staining, Hydroxyproline
							cells /kg				
Rafiq[2 1]	20 22		RC T		CCL4	BM- MSCs	1×1 0 <sup>6</sup>	tail vein	Ferulic Acid	0.30mg/g	ALT, ALB, Total-bilirubin

		Pakistan		BALB/c mice			cells/kg				
Zhang[15]	2022	China	RC T	SD rats	CCL4	BM- MSCs	5 ×10 <sup>6</sup> cells/kg	tail vein	Melaton	10mg/kg	ALT、AST、α-SMA、HE、Masson
Slautin [18]	2023	Russian	RC T	CD1 mice	CCL4	PD- MSCs	1×10 <sup>6</sup> cells/kg	tail vein	Fucoxanthin	10mg/kg	ALT、AST、ALB、α-SMA、Total-bilirubin、MMP-9

**Supplementary Table 2 Detailed search strategy.**

	<b>Detailed search strategy</b>		
Datab ase	Search Details	Res ults	T i m e

Pubmed	<p>("Liver Cirrhosis"[MeSH Terms] OR ("hepatic cirrhosis"[Title/Abstract] OR "cirrhosis hepatic"[Title/Abstract] OR "cirrhosis liver"[Title/Abstract] OR "fibrosis liver"[Title/Abstract] OR "liver fibrosis"[Title/Abstract])) AND ("Mesenchymal Stem Cells"[MeSH Terms] OR ("stem cell mesenchymal"[Title/Abstract] OR "mesenchymal stem cell"[Title/Abstract] OR "stem cells mesenchymal"[Title/Abstract] OR "bone marrow mesenchymal stem cells"[Title/Abstract] OR "bone marrow mesenchymal stem cell"[Title/Abstract] OR "bone marrow stromal cells"[Title/Abstract] OR "bone marrow stromal cell"[Title/Abstract] OR "bone marrow stromal cells multipotent"[Title/Abstract] OR "multipotent bone marrow stromal cell"[Title/Abstract] OR "multipotent bone marrow stromal cells"[Title/Abstract] OR "adipose derived mesenchymal stem cells"[Title/Abstract] OR "adipose derived mesenchymal stem cells"[Title/Abstract] OR "adipose derived mesenchymal stromal cells"[Title/Abstract] OR "adipose derived mesenchymal stromal cells"[Title/Abstract] OR "adipose derived mesenchymal stromal cells adipose derived"[Title/Abstract] OR "mesenchymal stem cells adipose derived"[Title/Abstract] OR "adipose derived mesenchymal stem cell"[Title/Abstract] OR "adipose derived mesenchymal stem cell"[Title/Abstract] OR "adipose tissue derived mesenchymal stem cell"[Title/Abstract] OR "adipose tissue derived mesenchymal stem cell"[Title/Abstract] OR "adipose tissue derived mesenchymal stem cells"[Title/Abstract] OR "adipose tissue derived mesenchymal stem cells"[Title/Abstract] OR "adipose tissue derived mesenchymal stromal cells"[Title/Abstract] OR "adipose tissue derived mesenchymal stromal cells"[Title/Abstract] OR "adipose tissue derived mesenchymal stromal cell"[Title/Abstract] OR "adipose tissue</p>	1106	1
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		ies	3
			1



derived mesenchymal stromal cell"[Title/Abstract] OR "mesenchymal stromal cells"[Title/Abstract] OR "mesenchymal stromal cell"[Title/Abstract] OR "stromal cell mesenchymal"[Title/Abstract] OR "stromal cells mesenchymal"[Title/Abstract] OR "multipotent mesenchymal stromal cells"[Title/Abstract] OR "multipotent mesenchymal stromal cell"[Title/Abstract] OR "mesenchymal stromal cells multipotent"[Title/Abstract] OR "mesenchymal progenitor cell"[Title/Abstract] OR "mesenchymal progenitor cells"[Title/Abstract] OR "progenitor cell mesenchymal"[Title/Abstract] OR "progenitor cells mesenchymal"[Title/Abstract] OR "wharton jelly cells"[Title/Abstract] OR "wharton s jelly cells"[Title/Abstract] OR "whartons jelly cell"[Title/Abstract] OR "whartons jelly cells"[Title/Abstract] OR "bone marrow stromal stem cells"[Title/Abstract]))

Web of science	Liver Cirrhosis (Topic) or Hepatic Cirrhosis (Topic) or Cirrhosis, Hepatic (Topic) or Cirrhosis, Liver (Topic) or Fibrosis, Liver (Topic) or Liver Fibrosis (Topic) AND Mesenchymal Stem Cells (Topic) or Stem Cell, Mesenchymal (Abstract) or Mesenchymal Stem Cell (Abstract) or Stem Cells, Mesenchymal (Abstract) or Bone Marrow Mesenchymal Stem Cells (Abstract) or Bone Marrow Mesenchymal Stem Cell (Abstract) or Bone Marrow Stromal Cells (Abstract) or Bone Marrow Stromal Cell (Abstract) or Bone Marrow Stromal Cells, Multipotent (Abstract) or Multipotent Bone Marrow Stromal Cell (Abstract) or Multipotent Bone Marrow Stromal Cells (Abstract) or Adipose-Derived Mesenchymal Stem Cells (Abstract) or Adipose Derived Mesenchymal Stem Cells (Abstract) or Adipose-Derived Mesenchymal Stromal Cells (Abstract) or Adipose Derived Mesenchymal Stromal Cells (Abstract) or Mesenchymal Stem Cells, Adipose-Derived (Abstract) or Mesenchymal Stem Cells, Adipose Derived (Abstract) or Adipose-Derived Mesenchymal Stem Cell (Abstract) or Adipose Derived Mesenchymal Stem Cell (Abstract) or Adipose Tissue-Derived Mesenchymal Stem Cell (Abstract) or Adipose Tissue Derived Mesenchymal Stem Cell (Abstract) or Adipose Tissue-Derived Mesenchymal Stem Cells (Abstract) or Adipose Tissue Derived Mesenchymal Stem Cells (Abstract) or Adipose Tissue-Derived Mesenchymal Stromal Cells (Abstract) or Adipose Tissue Derived Mesenchymal Stromal Cells (Abstract) or Adipose Tissue-Derived Mesenchymal Stromal Cell (Abstract) or Adipose Tissue Derived Mesenchymal Stromal Cell (Abstract) or Mesenchymal Stromal Cells (Abstract) or Mesenchymal Stromal Cell (Abstract) or Stromal Cell, Mesenchymal (Abstract) or Stromal Cells, Mesenchymal (Abstract) or Multipotent	1503 studies	17:00
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	<p>Mesenchymal Stromal Cells (Abstract) or Multipotent Mesenchymal Stromal Cell (Abstract) or Mesenchymal Stromal Cells, Multipotent (Abstract) or Mesenchymal Progenitor Cell (Abstract) or Mesenchymal Progenitor Cells (Abstract) or Progenitor Cell, Mesenchymal (Abstract) or Progenitor Cells, Mesenchymal (Abstract) or Wharton Jelly Cells (Abstract) or Wharton's Jelly Cells (Abstract) or Wharton's Jelly Cell (Abstract) or Whartons Jelly Cells (Abstract) or Bone Marrow Stromal Stem Cells (Abstract)</p>		
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