Table 1. Characteristic of the included studies

Author (year)	Research type	the kind of cells	Precontioned	Model	conditioned medium group	other group	Assessment in vivo	Conclusion
Tam K(2014)[11]	parallel controlled design	Wharton`s jelly of human umbilical cords mesenchymal stem cells(hWJSCs)	None	Excisional wounds in mice; Diabetic wounds in immunodeficient mice	hWJSCs-CM(conditioned medium)+AV/PCL(aloe vera-polycaprolactone); CCD(Human foreskin fibroblasts)-CM+AV/PCL	hWJSCs+AV/PCL; CCD+AV/PCL; PBS+AV/PCL; untreated	rapid wound closure; wound closure rates; histological examination; TaqMan qRT-PCR	hWJSCs with nanoscaffold may be a idea wound dressings for slow healing and hard-to-heal wounds
Jun EK(2014)[12]	parallel controlled design	Human amniotic fluid-derived mesenchymal stem cells(AF-MSCs)	Hypoxia	excisional wounds splinting model	AF-MSCs-hypoxia CM; AF-MSCs-normal CM	Vehicle medium(DMEM/F12)	General observation; degree of wound closure; H&E staining; Immunohistochemistry	AF-MSCs-hypoxia CM improves the wound healing through fibronectin-enhanced cell migration and TGF-β/SMAD2 and PI3K/AKT signal pathways
Fong CY(2014)[13]	parallel controlled design	Wharton`s jelly of human umbilical cords mesenchymal stem cells(hWJSCs)	None	excisional wounds in mice; diabetic wounds in immunodeficient mice	hWJSCs-CM; CCD(Human foreskin fibroblasts)-CM	hWJSCs; CCD; unconditioned medium	General observation; percentage healing rates; Immunohistochemistry; molecular analysis	hWJSCs enhance healing of excisional and diabetic wounds via differentiation and secretion
Chen L(2014)[5]	parallel controlled design	Bone marrow-derived mesenchymal stem cells(BM-MSC)	Hypoxia	full-thickness excisional wounds in nude mice	BM-MSC normal CM; BM-MSC hypoxia CM	Vehicle control	Immunohistochemical; Immunofluorescence	Hypoxic BM-MSCs and their secreted products might be enhance tissue repair subcutaneous injury
Arno AI(2014)[14]	parallel controlled design	Human Wharton`s jelly-derived Mesenchymal stem cells(WJ-MSCs)	None	Full-thickness skin excisional wounds in BALB/c mice	WJ-MSC-CM with Matrigel	Non-conditioned medium with Matrigel	Wound healing rates; Immunohistochemisty(Brdu)	Human WJ-MSCs promote wound healing by paracrine signaling in culture conditions in vivo model
Zhou BR(2013)[15]	parallel controlled design	Human adipose-derived stem cells(ADSCs)	None	Fractional carbon dioxide laser resurfacing(FxCR)on human skin	ADSCs-CM	Dulbecco`s modified Eagle`s Medium(DMEM)	Dermatological changes(erythema, melanin, TEWL, elasticity); Histopathological analysis(H&E, Masson-Trichrome, Gomori`s aldehyde fuchsin staining)	Allogenic ADSC-CM could be an effective method for enhancing wound healing and reducing transient unwanted adverse effects after FxCR skin rejuvenation
Tamari M(2013)[16]	parallel controlled design	Bone marrow-derived mesenchymal stem cells(BM-MSC)	None	Excisional wound-splinting mouse model	BM-MSC-CM	BM-MSC; Phosphate-buffered saline(PBS)(control)	Macroscopical and histological observation	MSC-CM contains growth factor derived from stem cells, is able to accelerate wound healing as well as stem cell transplantation
Zimber MP(2012)[17]	parallel controlled design	Human cells(BM-MSCs?)	Hypoxia	Human postlaser wounds	Concentration of human Cells conditioned medium(hCCM)(×0.1, ×1, ×10)	Gel without hCCM	Erythema; edema; dryness; peeling; transepidermal water loss	The utility of ×10 concentration hCCM appears to promote more rapid, scarless wound healing after resurfacing procedures and more normal skin recovery

Mishra PJ(2012)[18]	parallel controlled design	Bone marrow-derived human mesenchymal stem cells(BMD-hMSCs)	None	Excisional wounds in NOD/SCID and nude mice	Conditioned medium concentrate from hMSC(Hmsc(CMC))	Saline (control) group	Healing time; Immunohistochemistry	Cell-free derivatives of human MSCs are useful for wound healing purposes
Yew TL(2011)[4]	parallel controlled design	Bone marrow-derived mesenchymal stem cells(BM-MSCs)	None	Excisional wound splinting model in BALB/c mice	Conditioned medium from MSCs; Conditioned medium from MSCs+anti IL-6	α-minimal essential medium(α-MEM); α-MEM+IL-6	The percentage of wound closure; Histologic examination	MSCs promote wound healing through releasing a repertoire of paracrine factors via activation of p38 MAPK
Lee MJ(2011)[19]	parallel controlled design	Human embryonic stem cell-derived endothelial precursor cells(hESC-EPC)	None	Excisional wound model in BALB/c nude mice	hESC-EPC conditioned medium;Cord blood-EPC conditioned medium	Control vehicle medium	Wound closure time; the percentage of wound closure; immunohistochemical analysis	The spectrum of cytokines released by hESC-EPC are functionally involved in the wound healing process
Heo SC(2011)[20]	parallel controlled design	Human adipose-derived stem cells(ASCs)	Tumor necrosis factor(TNF)-α treated	Cutaneous wound healing model in Sprague-Dawley rats	TNF-α conditioned medium; control contioned medium	PBS(control)	Immunocytochemistry and histological analysis	TNF-α-activated ASCs accelerate cutaneous wound healing through paracrine mechanisms involving IL-6 and IL-8
Yoon BS(2010)[21]	parallel controlled design	Amniotic fluid-derived mesenchymal stem cells(AF-MSCs)	None	Excisional wound model in mice	AF-MSCs-conditioned medium	Control medium	The percentage of wound closure; histologic examination; immunochemistry	AF-MSCs secreted high levels of factors, which could enhance wound healing, may represent a novel therapy to improve the effectiveness of tissue repair
Cho JW(2010)[22]	parallel controlled design	Adipose-derived stem cells(ADSCs)	Tumor growth factor(TGF)-β 1 treated	Excisional wound model in hairless mice	TGF-β1-treated ADSCs-conditioned medium; ADSCs-conditioned medium(control)	-	Wound reducing size; histological analysis(?Not in result)	ADSCs-CM play important roles on promotion of wound healing in skin through up-regulation of type 1 collagen, MMP-1 expression, migration and proliferation of fibroblasts
Templin C(2009)[23]	parallel controlled design	Immortalization of murine haematopoietic progenitor cells(Dkmix cells)	None	Full-thickness excisional wound model in C57BL/6 mice	Dkmix cells` conditioned medium	Dkmix cells; PBS	The precentage of wound closure; Histological examination	Immortalized haematopoietic progenitor cells(Dkmix cells) significantly improve dermal wound healing by paracrine effects
Lee EY(2009)[24]	parallel controlled design	Adipose-derived stem cells(ADSCs)	Hypoxia	Full-thickness wounds in female hairless mice	Hypoxia-ADSCs conditioned medium; Normal-ADSCs conditioned medium	-	Remaining wound area	Hypoxia increases the proliferation of ADSCs and enhance the wound healing function of ADSCs,at least partly, by up-regulating the secretion of VEGF and bFGF
Kellar RS(2009)[25]	parallel controlled design	Neonatal fibroblasts	Hypoxia	Ablative Fractional Erbium Laser in the peri-oral and peri-ocular; nonablative Fractional Erbium Laser on the remainder of face	Hypoxic conditioned culture medium(HCCM) of neonatal fibroblasts(ReGenica™)	Vehicle gel formulation(control)	The amount of erythema(clinical evaluation, bioinstrumental assessment)	This HCCM product greatly improved in erythema and re-epithelization of the peri-oral and peri-ocular regions.
Chen L(2008)[26]	parallel controlled design	Bone marrow derived mesenchymal stem cells(BM-MSCs)	None	Excisional wound splinting model in BALB/c mice	Fibroblast-conditioned medium;MSC-conditioned medium	Pre-conditioned medium	The percentage of wound closure; Immunostaining and confocal microscopy	BM-MSCs released high levels of cytokines and chemokines which could enhance normal wound healing.