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Cell and cell-derivative-based therapy for liver diseases: current approaches and future promises
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Abstract
Introduction: According to the recent updates from World Health Organization, liver diseases are the 12th most common cause of mortality. Currently, orthotopic liver transplantation (OLT) is the most effective and the only treatment for end-stage liver diseases. Owing to several shortcomings like finite numbers of healthy organ donors, lifelong immunosuppression, and complexity of the procedure, cell and cell-derivatives therapies have emerged as a potential therapeutic alternative for liver diseases. Various cell types and therapies have been proposed and their therapeutic effects evaluated in preclinical or clinical studies, including hepatocytes, hepatocyte-like cells (HLCs) derived from stem cells, human liver stem cells (HLSCs), combination therapies with various types of cells, organoids, and implantable cell-biomaterial constructs with synthetic and natural polymers or even decellularized extracellular matrix (ECM). Areas covered: In this review, we highlighted the current status of cell and cell-derivative-based therapies for liver diseases. Furthermore, we discussed future prospects of using HLCs, liver organoids, and their combination therapies. Expert opinion: Promising application of stem cell-based techniques including iPSC technology has been integrated into novel techniques such as gene editing, directed differentiation, and organoid technology. iPSCs offer promising prospects to represent novel therapeutic strategies and modeling liver diseases. © 2023 Informa UK Limited, trading as Taylor & Francis Group.

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