INPLASY

Beneficial effects of exosomes on diabetic nephropathy: a systematic review and meta-analysis of preclinical evidence

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ADMINISTRATIVE INFORMATION

Review Stage at time of this submission - The review has not yet started. Anticipated or actual start date: 2024/01/20 Anticipated completion date: 2024/05/20

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202430123

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 March 2024 and was last updated on 23 May 2024.

INTRODUCTION

Review question / Objective P: diabetic mice or rats ; I: exosomes; C：PBS; saline; equal volume of mediators; untreated； O: renal function (Cre, BUN), UACR, 24-hour urinary protein, inflammatory factors (TNF-α, IL-1 β, IL-10), oxidative stress (MDA, TCA)；S: randomized controlled trial.

Condition being studied The prevalence of diabetic nephropathy in the aged population was significantly increased year by year. Diabetic nephropathy is one of the main causes of morbidity and mortality in the world. Exosomes are cell-free therapies obtained from living organisms, so they have less immune rejection and stronger biocompatibility. Exosome therapy can significantly improve the progression of diabetic nephropathy.

METHODS

Participant or population Population: all animal models with DKD, regardless of species, age, or sex.

Intervention The experimental group was treated with any dose of exosome monotherapy or exosome combined with any other drug.

Comparator The control group received an equal volume of nonfunctional fluid or no treatment.

Study designs to be included Study design. Exosomes in various dosage forms, including extracts, granules, and injections, were qualified.

Eligibility criteria Exclusion criteria: 1. No in vivo studies (in vitro studies, clinical trials, review articles, case reports, reviews, editorials and abstracts). two。 Additional drugs were used during the treatment. 3. Repeat the literature. 4. Full text not found.Publication bias in included studies was qualitatively assessed using a funnel plot;The literature is published in English.

Information sources A systematic search of PubMed, Cochrane Library, Web of Science, and EMBASE for relevant trials assessing the efficacy of cell-derived exosome applications in diabetic nephropathy was performed and published by 05/01/2024.

Main outcome(s) Results: 24-hour proteinuria, UACR, renal function (SCr and BUN), inflammatory factors and oxidative stress indexes were observed under the condition of intervention for 2 weeks to 12 weeks and doses ranging from 50 to 100.

Quality assessment / Risk of bias analysis Risk bias in using SYRCLE Rely on assessment tools to evaluate animal reality As for the inherent authenticity of the test, the SYRCLE tool includes 10 items and 22 sub-items. The types of bias involved include selective bias, implementation bias, measurement bias, loss of follow-up bias, reporting bias and other biases, which can be used to assess the risk of bias in intervention animal experiments. The evaluation results of 10 items in the evaluation tool are finally "yes" and "no". And "uncertainty" indicate that "yes" represents low risk bias, "no" represents high risk bias, and "uncertainty" represents no. Determine risk bias.

Strategy of data synthesis Data analysis was performed using RevMan 5.3 software. The study evaluated the differences between the exosome and control groups. The continuous variable is expressed as the standardized mean difference (SMD) with a 95% confidence interval.

Subgroup analysis In order to improve the stability of the study, it was included in the study according to the source of the exocrine, the course of administration and the variety of animals. The data were analyzed by subgroup analysis to further evaluate the effect of exocrine.

Sensitivity analysis In the process of sensitivity analysis, one study at a time was excluded and the results (Lin and Chu,2018) were observed.

Country(ies) involved China.

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Review stage: Completed
Preliminary searches: Completed
Piloting of the study selection process: Completed
Formal screening of search results against eligibility criteria: Completed
Data extraction: Completed
Risk of bias (quality) assessment: Completed
Data analysis: Completed
All the work has been completed.