INPLASY

Interventional effects of baicalin in animal models of diabetic nephropathy and its mechanism of action: a systematic review and meta-analysis

INPLASY2024120099

doi: 10.37766/inplasy2024.12.0099

Received: 24 December 2024

Published: 24 December 2024

Corresponding author:
An Hengtong

13785239077@163.com

Author Affiliation:
The Hebei University of chinese medicine.

An, HT; Liu, LY; Gao, WJ.

ADMINISTRATIVE INFORMATION

Support - National Natural Science Foundation of China (32141005).

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2024120099

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 December 2024 and was last updated on 24 December 2024.

INTRODUCTION

Review question / Objective The animal model of diabetic nephropathy was taken as the research object, baicalin was used as the intervention, and the control group did not intervene or vehicle intervention, and the outcome indicators were creatinine, urea nitrogen, blood glucose, blood lipids, inflammation, oxidative stress, and fibrosis.

Condition being studied Diabeticnephropathy (DN) is one of the most important microvascular complications of diabetes mellitus (DM). Its clinical manifestations are mainly proteinuria, edema, hypertension and progressive renal function impairment. The advanced stage can progress to end-stage renaldisease (ESRD), which seriously affects the quality of life of patients.

METHODS

Participant or population Animal models of diabetic nephropathy.

Intervention Baicalin.

Comparator No intervention or vehicle intervention.

Study designs to be included Animal Experiments.

Eligibility criteria Inclusion criteria: An animal model of diabetic nephropathy was used as the research object, baicalin was used as the intervention, no intervention or vehicle intervention in the control group, and the outcome indicators were creatinine, urea nitrogen, blood glucose, blood lipids, inflammation, oxidative stress, and fibrosis.
Exclusion Criteria: (1) non-in vivo studies (e.g., clinical trials, reviews, case reports, and cell experiments) (2) those that met the inclusion criteria but could not obtain full texts. (3) There is no control group or combined with other drug treatment. (4) Duplicate publications. (5) Unable to obtain key information about the experiment, such

as sample size, standard deviation, or standard error.

Information sources PubMed, Web of Science, and Embase.

Main outcome(s) Serum creatinine (SCR) and blood urea nitrogen(BUN).

Quality assessment / Risk of bias analysis SYRCLE's Risk of Bias tool：The specific items are as follows: (1) Sequence generation, (2) Baseline characteristics, (3) Allocation concealment, (4) Random housing, (5) Blinding, (6) Random outcome assessment, (7) Blinding, (8) Incomplete outcome data, (9) Selective outcome reporting, and (10) Other sources of bias.

Strategy of data synthesis Statistical analysis was performed using software stata15.1, and the included data were continuous and their combined total effect sizes were expressed as standardised mean differences (SMDs) with 95% confidence intervals (CI). Heterogeneity was expressed using I-squared (I2), and when heterogeneity > 50%, a random-effects model was used, otherwise a fixed-effect model was used. $P<0.05$ considered the difference statistically significant.

Subgroup analysis Three subgroups were predetermined for our analysis: (1) animal species, (2) methods of modeling, and (3) duration of the modeling process.

Sensitivity analysis Sensitivity analysis was performed using STATA software, regardless of whether the source of heterogeneity could be explored in subgroup analyses, to help researchers assess the stability of meta-analysis results.

Country(ies) involved China.

Keywords Diabetic nephropathy; Animal model; Baicalin; Systematic review; Mechanisms of action; Meta-analysis.

Contributions of each author

Author 1 - An Hengtong.
Email: 13785239077@163.com
Author 2 - Liu Luyao.
Author 3 - Gao Weijuan.