

Therapeutic effects of Schisandra chinensis on liver injury in preclinical studies: a systematic review and meta-analysis

INPLASY202520084

doi: 10.37766/inplasy2025.2.0084

Received: 18 February 2025

Published: 18 February 2025

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ADMINISTRATIVE INFORMATION**Support** - Supported by Sanming Project of Medicine in Shenzhen (No.SZZYSM202311014).**Review Stage at time of this submission** - The review has not yet started.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202520084**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 February 2025 and was last updated on 18 February 2025.**INTRODUCTION**

Review question / Objective Do Schisandra chinensis and its monomers reduce injury in animal models of liver injury compared to controls?

Population (P): Animal model of liver injury

Intervention (I): Schisandra chinensis or its monomers as the only intervention

Comparison (C): a placebo solution or no treatment

Outcome (O): Glutamine transaminase and glutamine transaminase.

Condition being studied Liver injury refers to varying degrees of swelling, degeneration, necrosis, or apoptosis of liver cells caused by certain physical, chemical factors, or external environmental conditions. Additionally, liver injury is a common initial pathological state in various liver diseases. Over time, through a series of complex pathological changes, liver injury can

progress to liver fibrosis, cirrhosis, and hepatocellular carcinoma. Schisandra chinensis is a traditional Chinese medicine with significant hepatoprotective effects and is widely used in treating liver injury. Its active components, including lignans, polysaccharides, and organic acids, protect the liver through multiple mechanisms such as antioxidant, anti-inflammatory, and anti-apoptotic activities. A systematic review integrating data from existing studies could enhance the credibility of the evidence and strengthen this conclusion.

METHODS

Participant or population Animal models of liver injury induced by drugs or chemical agents.

Intervention Schisandra chinensis extracts and Schisandra chinensis monomer compounds with clear administration time and dose.

Comparator Vehicle-treated control animals.

Study designs to be included In vivo experiments; papers describing the number of animals used; published in English-language journals; use of animal models of liver injury; use of Schisandra chinensis and its monomers as the only intervention.

Eligibility criteria Papers: describing the number of animals used.

Information sources PubMed, Web of Science, Embase, and Cochrane Library.

Main outcome(s) AST、ALT.

Quality assessment / Risk of bias analysis To assess the data quality of the articles included in this review, two researchers used the SYRGL risk of bias tool. The tool comprehensively assesses ten dimensions of bias, including selection bias, detection bias, performance bias, attrition bias, reporting bias, and other biases. In cases of disagreement, a third researcher is consulted. The tool provides three possible responses: “+” indicates low risk of bias, “-” indicates a high risk of bias, and “?” indicates that the attribution of the concept of characterization could not be determined. Statistical Analysis.

Strategy of data synthesis Summary statistics were calculated using the standard mean difference (SMD) and 95% confidence interval (CI). Heterogeneity among studies was assessed using the I^2 statistic. Depending on the degree of heterogeneity, different effect models were applied: a random-effects model was used when $I^2 > 50\%$, and a fixed-effects model was applied otherwise. All statistical analyses were performed using Stata 16.0.

The sources of heterogeneity were explored through subgroup analysis and sensitivity analysis. When more than 10 studies were included, publication bias was evaluated by funnel plots. A significance level of $P < 0.05$ was considered statistically significant.

Subgroup analysis The following study characteristics will be considered as potential sources of heterogeneity: animal species, modelling drugs, and therapeutic drugs. For subgroup analysis, a minimum of 10 studies per subgroup will be required.

Sensitivity analysis Analysis of combined effect sizes was conducted using a study-by-study exclusion approach.

Country(ies) involved China.

Keywords Schisandra chinensis, preclinical studies, liver injury, herbal monomers, meta-analysis.

Contributions of each author

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