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Quercetin's potential value in acute lung injury: A meta-analysis of systematic reviews and preclinical studies

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ADMINISTRATIVE INFORMATION

Support - The key discipline construction project of "Clinical Research on Integrated Traditional Chinese and Western Medicine for Pulmonary Diseases" of Shanxi University of Traditional Chinese Medicine (Project Number: 1006Z3) and the "National Science and Technology Major Project" (Project Number: 2023ZD0506702)The key discipline construction project of "Clinical Research on Integrated Traditional Chinese and Western Medicine for Pulmonary Diseases" of Shanxi University of Traditional Chinese Medicine (Project Number: 1006Z3) and the "National Science and Technology Major Project" (Project Number: 2023ZD0506702).

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590091

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 September 2025 and was last updated on 23 September 2025.

INTRODUCTION

Review question / Objective The inclusion criteria were determined according to the PICOS principle. ① Disease type: Acute lung injury; ② Intervention measures: Quercetin; ③ Control measures: Lung injury model; ④ Outcome indicators: Lung index (Lung index), tumor necrosis factor α (TNF-α), interleukin 6 (IL-6), interleukin 1β (IL-1β), lung injury score (Lung injury score), lung wet-to-dry weight ratio (W/D), myeloperoxidase (MPO), superoxide dismutase (SOD), malondialdehyde (MDA), catalase (CAT), neutrophil count (Neutrophil), total cell count (Total cells); ⑤ Study design: Randomized controlled trial.

Condition being studied Acute lung injury.

METHODS

Participant or population Lung injury model.

Intervention Quercetin.

Comparator Lung injury model.

Study designs to be included RCT.

Eligibility criteria Exclusion criteria: ① Reviews, in vitro studies, clinical trials, case reports, editorials, conference papers; ② Literature whose full text cannot be obtained; ③ Literature without specific

experimental data or whose experimental data cannot be extracted.

Information sources The system retrieved data from 5 databases: Pub Med, Web of Science, Cochrane Library, Embase, and OVID.

Main outcome(s) Quercetin can improve the levels of inflammatory factors, oxidative stress indicators and lung tissue damage indicators, thereby alleviating lung injury.Quercetin can improve the levels of inflammatory factors, oxidative stress indicators and lung tissue damage indicators, thereby alleviating lung injury.

Quality assessment / Risk of bias analysis Cochrane Handbook and PRISMA Statement
Carry out quality assessment using the SYRCLE RoB tool.

Strategy of data synthesis All the extracted data were subjected to a meta-analysis using Review Manager 5.4.Due to the differences in drug dosage, animal models, and intervention periods among the included literature, this analysis was pre-determined to use a random effects model for statistical analysis.

Subgroup analysis Levels of inflammatory factors, oxidative stress indicators, and lung tissue damage indicators.

Sensitivity analysis No.

Country(ies) involved China.

Keywords Acute lung injury; Quercetin; Animal experiments; Systematic review; Meta-analysis.

Contributions of each author
Author 1 - ruan nan.
Author 2 - zhang xuemin.
Author 3 - tian xiangyu.
Author 4 - fan enzhi.
Author 5 - bai li.