INPLASY

The potential value of quercetin for lung neoplasms: A systematic review and a meta-analysis of preclinical studies

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ADMINISTRATIVE INFORMATION

Support - Without financial support.

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

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 June 2025 and was last updated on 20 June 2025.

INTRODUCTION

Review question / Objective The therapeutic efficacy of quercetin in animal experiments for lung cancer.

Condition being studied According to the 2024 study, lung cancer became the most common cause of cancer death. In 2022, the total number of new cancer cases in the world is about 2.2 million, accounting for 12.4% of all cancer deaths, and the number of deaths is 20% of all cancer deaths. In addition to some limitations such as insufficient early screening (only 5-16% of high-risk populations worldwide receive LDCT screening) and low penetration rate of accurate detection (liquid biopsy sensitivity is only 60-80%), the clinical management of this disease also faces many challenges. Therefore, in order to solve the current problems in the treatment of lung cancer, it is particularly urgent to find new drugs for lung cancer treatment.

METHODS

Participant or population Healthy rodents that developed lung cancer tumors.

Intervention Receiving a certain dose of quercetin treatment.

Comparator The standard procedure of inducing lung cancer and then received placebo treatment after that.

Study designs to be included A randomized controlled trial.

Eligibility criteria Exclusion criteria include: (1) non-peer-reviewed materials, such as reviews, case reports, guidelines, and conference abstracts; (2) clinical trials and in vitro experiments; (3) duplicate or unrelated literature; (4) non-specific animal models for lung cancer; (5) pharmacological research or molecular experiments; (5) studies that may confuse results due to drug combinations or

other substances; (6) files or data that cannot be obtained in the full text.

Information sources We retrieved relevant studies published in various languages from the inception of the Embase, Web of Science, and PubMed databases up to June 2025.

Main outcome(s) Tumor volume, tumor size, animal model weight, lung tumor metastasis rate, tumor apoptosis rate, lung nodules, VEGF, Bax, Bcl-2, P53, SOD, GSH, MDA.

Quality assessment / Risk of bias analysis Two researchers (Xiucheng Duan and Liyuan Zhang) independently screened the literature using Endnote software. Any discrepancies were resolved by a third researcher (Fenye Liu). The primary extracted data include: (1) Basic information from the literature, such as the title, name of the first author, publication year, country, animal model information, modeling method, and administration method; (2) Intervention measures, including drug names, dosages, administration times, and frequencies; (3) Outcome measures related to the article. For studies reporting research data in image form, experimental data were extracted using the Engauge Digitizer software.

Strategy of data synthesis Two researchers (Xiucheng Duan and Liyuan Zhang) used the SYRCLE risk of bias tool to assess each entry, making judgments on low-risk, high-risk, and unclear categories based on the appropriate criteria. The standard criteria included sequence generation (selection bias), baseline characteristics (selection bias), allocation concealment (selection bias), random housing (performance bias), blinding (performance bias), random outcome assessment (detection bias), blinding (detection bias), incomplete outcome data (attrition bias), selective outcome reporting (reporting bias), and other sources of bias (other). Any disagreements were resolved through discussion with a third researcher.

Subgroup analysis Conduct relevant subgroup analyses when necessary for the research.

Sensitivity analysis Conduct relevant data sensitivity analysis when conducting the research.

Country(ies) involved China.

Keywords quercetin/lung neoplasms.

Contributions of each author

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