

INPLASY PROTOCOL

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The authors have no conflicts of interest to disclose.

Quercetin for Myocardial Ischemia Reperfusion Injury: A Protocol for Systematic Review and Meta Analysis

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Review question / Objective: P: rats in myocardial ischemia/reperfusion injury; I: received quercetin treatment merely; C: received vehicle or no treatment; O: primary outcomes were myocardial infarction size, myocardial injury marker, secondary outcomes were serum indices or protein levels relative to the mechanisms of quercetin in myocardial I/R injury; S: randomized controlled studies.

Condition being studied: At present, many animal experiments have reported that quercetin has a positive effect on myocardial ischemia-reperfusion injury, and the adjuvant treatment of limiting myocardial ischemia-reperfusion injury is still the current research focus. Therefore, preclinical systematic review and metaanalysis of quercetin for myocardial ischemia-reperfusion injury is of great significance to transform basic research into clinical treatment.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 May 2020 and was last updated on 16 May 2020 (registration number INPLASY202050067).

INTRODUCTION

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METHODS

Participant or population: Rats in myocardial ischemia/reperfusion injury.

Intervention: Received quercetin treatment merely.

Comparator: Received vehicle or no treatment.

Study designs to be included: Randomized controlled studies.

Eligibility criteria: Studies were included for analysis when they meet:(1) animal studies assessing the administration of quercetin for myocardial I/R model; (2) analyzed intervention received quercetin treatment merely; comparator intervention received vehicle or no treatment;(3) primary outcomes were myocardial infarction size, myocardial injury marker, secondary outcomes were serum indices or protein levels relative to the mechanisms of quercetin myocardial I/R injury.

Information sources: We searched for animal studies of quercetin for myocardial I/R injury in Chinese National Knowledge Infrastructure (CNKI), EMBASE, PubMed, VIP information database, Web of Science, China Biology Medicine disc(CBM) and Wanfang data Information. All the databases were searched from inception to March 2020. (2) Searching other resources: Grey literature compiles materials and researches that are not covered in the databases mentioned, as well as the sites of animal research organizations, Google Scholar and Baidu Scholar.

Main outcome(s): Main outcomes were myocardial infarction size and markers of myocardial injury.

Additional outcome(s): Additional outcomes were serum indices or protein levels relative to the mechanisms of quercetin in myocardial I/R injury.

Quality assessment / Risk of bias analysis: The study quality assessment was independently valued with the Collaborative Approach to Meta-Analysis and Review of Animal Data from Experimental Studies (CAMARADES). Two authors independently evaluated the quality of study using the 10-point scoring scale: A, peer reviewed publication; B, control of temperature; C, random allocation to treatment or control; D, blinded induction of model; E, blinded assessment of outcome; F, use of anesthetic without significant intrinsic cardioprotective activity; G, animal model(aged, diabetic, or hypertensive); H, sample size calculation; I, compliance with animal welfare regulations; J, statement of potential conflict of interests. Risk of bias analysis: SYRCLE's risk of bias tool for animal studies.

Strategy of data synthesis: Manager 5.2 version software. The estimate of the combined effect sizes was calculated by the standardized mean difference (SMD). The heterogeneity assumption was checked by I² statistics, when I² was less than 50%, fixed effects model was used for meta-analysis, otherwise, random effects model was carried out. 95% confidence intervals of all results were calculated, the significance was determined by Z-test, with a P value<0.05 as significant level.

Subgroup analysis: Subgroup analyses, which are designed for animals' species, age, gender, intervention time, dosage and route of administration, ischemic time and perfusion time, will be used to find the possible sources on account of a possibility of significant heterogeneity or inconsistency. In order to screen out the influencing factors that lead to heterogeneity, meta-regression will be

used to reflect the relationship between one or more explanatory variables and the outcome variable.

Sensibility analysis: The sensibility analysis of the overall comprehensive effect of all outcome indicators was carried out by exclusion method, each study will be excluded, and the remaining studies were reanalyzed to assess the stability of the results. If the results show that there is no qualitative change in the comprehensive effect, the results are stable and credible.

Country(ies) involved: China.

Keywords: quercetin; myocardial ischemia reperfusion injury; systematic review; meta-analysis.

Contributions of each author:

Author 1 - Liying Lu - Author 1 drafted the manuscript.

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