INPLASY PROTOCOL

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None declared.

Anti-inflammatory effects of Astragaloside IV in animal models of asthma: a systematic review and meta-analysis

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Review question / Objective: Asthma is a chronic inflammatory disease of the airways involving a variety of cells including inflammatory and structural cells of the airways (such as eosinophils, mast cells, T lymphocytes, neutrophils, smooth muscle cells, airway epithelial cells, etc.) and cellular components, which is clinically manifested by recurrent episodes of chest tightness, wheezing, coughing and shortness of breath. According to statistics, the prevalence of asthma in people over 20 years of age is 4.2%, and the trend is increasing year by year, mostly due to poorly controlled asthma and failure to receive timely and effective treatment during exacerbations, which eventually leads to respiratory failure. Although inhaled corticosteroid (ICS) is the first choice for treatment, its long-term use may lead to many adverse effects such as hoarseness, pharyngeal discomfort, and candida infection, as well as poor compliance and recurrent asthma attacks due to inadequate anti-inflammatory treatment. Therefore, how to control asthma more effectively is still a clinical problem that needs to be solved.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 October 2022 and was last updated on 03 October 2022 (registration number INPLASY2022100014).

INTRODUCTION

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shortness of breath. According to statistics, the prevalence of asthma in people over 20 years of age is 4.2%, and the trend is increasing year by year, mostly due to poorly controlled asthma and failure to receive timely and effective treatment during exacerbations, which eventually leads to respiratory failure. Although inhaled corticosteroid (ICS) is the first choice for treatment, its long-term use may lead to many adverse effects such as hoarseness, pharyngeal discomfort, and candida infection, as well as poor compliance and recurrent asthma attacks due to inadequate anti-inflammatory treatment. Therefore, how to control asthma more effectively is still a clinical problem that needs to be solved.

Condition being studied: Astragaloside IV (AST) can interfere with several processes in the pathogenesis of inflammation, such as the production of pro-inflammatory mediators, the expression of adhesion molecules, the adhesion of circulating leukocytes to endothelial cells, and the activation of nuclear transcription factor κB (NF-κB). However, the anti-inflammatory application of AST is limited by the scattered evidence. Studies of AST against airway inflammation have been widely reported recently, but the results observed are not identical to those of animal models, prompting us to perform a meta-analysis and systematic review. The main objective of this systematic review was to collect and analyze all anti-inflammatory data from animal models of AST for asthma to provide informative information for therapeutic asthma studies.

METHODS

Participant or population: Animal studies.

Intervention: The treatment group was given Astragaloside IV monotherapy, regardless of the dose administered, the mode of administration, and the time of administration.

Comparator: A blank treatment or isometric placebo was received in the control group.

Study designs to be included: Only animal studies evaluating the anti-inflammatory effects of Astragaloside IV for the treatment of asthma, regardless of publication status or language, were included.

Eligibility criteria: We included controlled studies to assess the management of Astragaloside IV in animal models of asthma established by different methods, regardless of animal species, age, weight, and sex.

Information sources: Electronic searches were performed in eight databases without language restrictions from their respective inception to 2022: PubMedEMBASEWeb of Science Cochrane LibraryChinese National KnowledgeInfrastructure Chinese Biomedical Literature Database Chinese VIP Database, and Wanfang Database.

Main outcome(s): interferon-γ(IFN-γ), IL-4, IL-13.

Quality assessment / Risk of bias analysis: The risk of bias was tested bythe CAMARADES 10-item quality checklist for each study.

Strategy of data synthesis: When high heterogeneity or statistical heterogeneity was detected a random effect model(12≥50%)was used otherwise a fixed effect model(12<50%)The effect of publication bias was studied by Eegg's test for publication bias. Continuous variables used mean difference (mean difference, MD) or standard mean deviation(standard mean difference, SMD)to calculate a 95% credible interval (confidence intervals, CI).

Subgroup analysis: Subgroup analysis was performed according to the different doses of Astragaloside IV administered.

Sensitivity analysis: We performed a sensitivity analysis by omitting single studies one by one.

Country(ies) involved: China.

Keywords: Meta-Analysis; Astragaloside IV;
Animal Models.

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