INPLASY PROTOCOL

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**None declared.**

# Treatment of myasthenia gravis with the method of tonifying spleen and replenishing qi in traditional Chinese medicine: A protocol for systematic review and meta-analysis

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**Review question / Objective:** **The purpose of this study was to systematically and comprehensively search the published randomized controlled trial literature for systematic evaluation and meta-analysis, so as to provide evidence-based basis for TCM therapy of myasthenia gravis by tonifying spleen and replenishing qi, and to clarify the direction of clinical treatment.**
**Information sources:** **Search the following databases: PubMed, Cochrane Library, EMBASE, Web of Science, Springer, CNKI, Wanfang, China Biomedical Database, China Science and Technology Journal Database, China Knowledge Infrastructure, China Clinical Trial Registry and Baidu Scholar. Collect all the RCTs of the Chinese medicine method of tonifying spleen and replenishing qi to treat MG. We only search for articles published in the self-built database until December 2021, only Chinese and English articles, and do not include unpublished articles.From establishment to December 2021, we searched the following databases: PubMed, Cochrane Library, EMBASE, Web of Science, Springer, CNKI, Wanfang, China Biomedical Database, China Science and Technology Journal Database, Chinese Knowledge Infrastructure, China Clinical Trial Registry and Baidu Scholars. The literature search language is limited to Chinese and English, and the publication time and status are not limited. Only randomized controlled trials (RCT) are included.**

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 December 2021 and was last updated on 11 December 2021 (registration number INPLASY2021120053).

## INTRODUCTION

**Review question / Objective:** **The purpose of this study was to systematically and comprehensively search the published randomized controlled trial literature for systematic evaluation and meta-analysis, so as to provide evidence-based basis for**

TCM therapy of myasthenia gravis by tonifying spleen and replenishing qi, and to clarify the direction of clinical treatment.

**Condition being studied:** Myasthenia gravis (MG) is an autoimmune disease that is mediated by acetylcholine receptor antibody (AChR-Ab), which is dependent on cellular immunity and complement-participated in the transmission of neuromuscular junctions. MG lesions mainly involve acetylcholine receptors (AChR) on the neuromuscular junction (NMJ) postsynaptic membrane. Typical symptoms include drooping upper face, difficulty swallowing and chewing, hoarse voice, difficulty exhaling, skeletal muscle fatigue, and heavy morning and evening symptoms. Western medicine treatment of MG includes cholinesterase inhibitors, adrenal cortex hormones, immuno-suppressive agents, plasma exchange, and thymectomy. Due to the complicated etiology of MG, the long course of the disease, and the tendency to recur, it has caused a huge economic and psychological burden on patients, families and society. In recent years, Chinese medicine has continuously achieved good clinical effects in the clinical treatment of MG. Traditional Chinese medicine believes that spleen nourishes the muscles of the whole body, and weak spleen leads to weakness in limbs, weakness in lifting the eyelids, and fatigue easily. Therefore, the traditional Chinese medicine treatment of MG is mostly used to tonifying spleen and replenishing qi, and it has achieved good clinical results. However, the efficacy and safety of the treatment of MG for the treatment of MG have not been systematically evaluated. This study aims to systematically and comprehensively retrieve published A systematic review and meta-analysis of the randomized controlled trial literature provided by Chinese medicine for the treatment of MG with the method of tonifying spleen and replenishing qi, and clarifying the direction of clinical treatment.

## METHODS

**Participant or population:** Patients who are clearly diagnosed as MG according to internationally recognized diagnostic standards are not limited to age, sex, occupation, country, ethnicity, and source of cases. Patients with severe cardiovascular diseases and mental illnesses are excluded.

**Intervention:** The intervention measures of the intervention group were combined treatment with traditional Chinese medicine for invigorating the spleen and qi (oral Chinese herbal medicine or Chinese patent medicine, etc.) and western medicine.

**Comparator:** The control group was routinely given western medicine treatment, including cholinesterase inhibitors, glucocorticoids, immunosuppressants, etc. alone or in combination or a placebo control group.

**Study designs to be included:** This study will include the Chinese and English literature reporting the safety and efficacy of tonifying spleen and replenishing qi in the treatment of myasthenia gravis. Patients with myasthenia gravis diagnosed in the literature were divided into intervention group and control group. By comparing the results of outcome indicators, the efficacy and safety of traditional Chinese medicine tonifying spleen and replenishing qi in the treatment of myasthenia gravis were systematically evaluated.

**Eligibility criteria:** Two research members initially screened the articles according to the inclusion criteria, imported them into Endnote X9 for grouping, and checked for duplication. Then the selected documents will be eliminated according to the title and abstract, and the documents will be screened. Finally, the third research member will check all the documents and make a final decision based on the standards. All screening processes are carried out independently. If two research members disagree, the third research

member will make a decision.By comparing the main outcome indicators: effective rate, recurrence rate, quality of life, quantitative myasthenia gravis score (QMG). And secondary outcome measures: clinical absolute score, TCM syndrome score, serum acetylcholine receptor antibody (AChR AB) level, EMG low-frequency repetitive nerve stimulation (RNs) results to evaluate the efficacy and safety of traditional Chinese medicine tonifying spleen and replenishing qi in the treatment of myasthenia gravis.

**Information sources:** Search the following databases: PubMed, Cochrane Library, EMBASE, Web of Science, Springer, CNKI, Wanfang, China Biomedical Database, China Science and Technology Journal Database, China Knowledge Infrastructure, China Clinical Trial Registry and Baidu Scholar. Collect all the RCTs of the Chinese medicine method of tonifying spleen and replenishing qi to treat MG. We only search for articles published in the self-built database until December 2021, only Chinese and English articles, and do not include unpublished articles.From establishment to December 2021, we searched the following databases: PubMed, Cochrane Library, EMBASE, Web of Science, Springer, CNKI, Wanfang, China Biomedical Database, China Science and Technology Journal Database, Chinese Knowledge Infrastructure, China Clinical Trial Registry and Baidu Scholars. The literature search language is limited to Chinese and English, and the publication time and status are not limited. Only randomized controlled trials (RCT) are included.

**Main outcome(s):** 1)effective rate. 2) recurrence rate. 3)quality of life. 4)quantitative myasthenia gravis score (QMG).

**Additional outcome(s):** 1)clinical absolute score. 2)TCM syndrome score. 3)serum acetylcholine receptor antibody (AChR AB) level. 4)EMG low-frequency repetitive nerve stimulation (RNS).

**Quality assessment / Risk of bias analysis:** The assessment was done independently by two study members, using the Cochrane Risk Assessment Tool to assess the risk of bias using the following seven criteria:Random sequence generation, allocation hiding, blind of participants and personnel, blind of outcome evaluators, incomplete result data, selective reporting and other biases, and assessment of low bias risk, unclear bias risk and high bias risk is given item by item.In the event of a disagreement between two study members, the third study member will determine the final assessment.

**Strategy of data synthesis:** Use Review Manager 5.3 The literature was meta analyzed by statistical software, and it was statistically significant when $p < 0.05$. Two research members are responsible for data extraction, input and calculation, and the third research member is responsible for data verification. We take the mean difference or standard mean difference with 95% confidence interval as the effect measure of continuous data. The dichotomous results will be analyzed by risk ratio with 95% confidence interval. We used I2 Statistics to detect clinical heterogeneity, which will be evaluated by chi square test and Higgins I2 test; If there is no obvious heterogeneity ($I2 \leq 50\%$, $P > 0.10$), the fixed effect model is adopted; If $P < 0.10$ and $I2 > 50\%$, the random effect model will be used for meta-analysis adopted.

**Subgroup analysis:** If the research data is sufficient, subgroup analysis will be carried out from the following aspects: MG classification, treatment time and type of western medicine, etc., to explain the heterogeneity between the studies.

**Sensitivity analysis:** If the results show high heterogeneity (I2 test> 50%), sensitivity analysis will be performed to obtain stable research results.

**Language:** English.

**Country(ies) involved:** China.

**Keywords:** Myasthenia gravis; invigorating the spleen and qi; systematic review; protocol; traditional Chinese medicine.

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