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Efficacy and Safety of Tanreqing Injection in Treating Acute Exacerbations of Chronic Obstructive Pulmonary Disease: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Ma, Z; Yang, D; An, Y.

Corresponding author:
Yunxia An

15515786535@163.com

Author Affiliation:
Henan Provincial People's Hospital, People's Hospital of Zhengzhou University.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data analysis.

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 18 May 2026 and was last updated on 18 May 2026.

INTRODUCTION

Review question / Objective To assess the efficacy and safety of Tanreqing Injection for patients with acute exacerbation of chronic obstructive pulmonary disease.

Condition being studied Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is a critical event associated with disease progression, hospitalization, and mortality. Tanreqing Injection, a traditional Chinese medicine formulation with functions of clearing heat, detoxifying, and resolving phlegm, is increasingly used as adjunctive therapy for AECOPD. However, a systematic evaluation of its efficacy and safety based on updated evidence remains warranted.

METHODS

Search strategy PubMed:
#1 "Pulmonary Disease, Chronic Obstructive"[Mesh] OR "COPD" OR "Chronic Obstructive Pulmonary Disease" OR "Chronic Obstructive Lung Disease" OR "COAD" OR "AECOPD" OR "Acute Exacerbation of Chronic Obstructive Pulmonary Disease"
#2 "Tanreqing"[Supplementary Concept] OR "Tanreqing Injection" OR "Tan Re Qing" OR "Tan-Re-Qing" OR "Chinese herbal injection"
#3 "Drug Therapy"[Mesh] OR "Therapeutics"[Mesh] OR "Treatment Outcome"[Mesh] OR "Randomized Controlled Trial"[Publication Type]
#4 #1 AND #2 AND #3
#5 Filters: Randomized Controlled Trial

EmBase:
'chronic obstructive lung disease'/exp AND 'tanreqing'/exp AND 'randomized controlled trial'/exp

Cochrane Library:
(Tanreqing OR "Tan Re Qing") AND (COPD OR "chronic obstructive pulmonary")

Web of Science:

#1 TS=(("chronic obstructive pulmonary disease" OR "chronic obstructive lung disease" OR COPD OR COAD OR "chronic airflow obstruction") AND ("acute exacerbation*" OR AECOPD OR exacerbation*))
#2 TS=("Tanreqing injection" OR "Tanreqing" OR "Tan Re Qing" OR "Tan-Re-Qing" OR "Tanre qing")
#3 TS=("randomized controlled trial" OR "randomised controlled trial" OR RCT OR randomized OR randomised OR randomly OR "controlled trial" OR "clinical trial" OR placebo)
#4 #1 AND #2 AND #3

CNKI:
(TI=('慢性阻塞性肺疾病' OR '慢性阻塞性肺病' OR 'COPD' OR '慢阻肺') AND ('急性加重' OR '急性发作' OR 'AECOPD'))
OR
(KY=('慢性阻塞性肺疾病' OR '慢性阻塞性肺病' OR 'COPD' OR '慢阻肺') AND ('急性加重' OR '急性发作' OR 'AECOPD'))
OR
(AB=('慢性阻塞性肺疾病' OR '慢性阻塞性肺病' OR 'COPD' OR '慢阻肺') AND ('急性加重' OR '急性发作' OR 'AECOPD'))
AND
(TI=('痰热清注射液' OR '痰热清') OR KY=('痰热清注射液' OR '痰热清') OR AB=('痰热清注射液' OR '痰热清'))
AND
(TI=('随机' OR '对照') OR KY=('随机' OR '对照') OR AB=('随机' OR '对照' OR 'RCT'))

Wanfang:
主题:((“慢性阻塞性肺疾病” OR “慢性阻塞性肺病” OR “慢阻肺” OR COPD) AND (“急性加重” OR “急性发作” OR AECOPD)) AND 主题:(“痰热清注射液” OR “痰热清”) AND 主题:(“随机” OR “对照” OR RCT).

Participant or population Adult inpatients or outpatients with a clear diagnosis of AECOPD according to recognized diagnostic criteria. There were no restrictions on race, nationality, or gender.

Intervention The experimental group received Tanreqing Injection combined with conventional Western medicine therapy (including, but not limited to, bronchodilators, corticosteroids, antibiotics, and oxygen therapy).

Comparator The control group received identical conventional Western medicine therapy alone or in combination with a placebo.

Study designs to be included RCTs.

Eligibility criteria Studies meeting all the following criteria were included: (1) Study design: randomized controlled trials (RCTs), regardless of blinding status; (2) participants: adult inpatients or outpatients with a clear diagnosis of AECOPD according to recognized diagnostic criteria. There were no restrictions on race, nationality, or gender; (3) interventions: the experimental group received Tanreqing Injection combined with conventional Western medicine therapy (including, but not limited to, bronchodilators, corticosteroids, antibiotics, and oxygen therapy). The control group received identical conventional Western medicine therapy alone or in combination with a placebo; and (4) outcomes: the primary outcome was the overall clinical response rate. Secondary outcomes included pulmonary function parameters, levels of inflammatory biomarkers, Chinese Medical Symptom Score, duration of hospital stay, and the incidence of adverse events.

Information sources PubMed, Embase, Cochrane Library, Web of Science, China National Knowledge Infrastructure (CNKI), and Wanfang Data.

Main outcome(s) Overall clinical response rate.

Additional outcome(s) Pulmonary function parameters, levels of inflammatory biomarkers, Chinese Medical Symptom Score, duration of hospital stay, and the incidence of adverse events.

Quality assessment / Risk of bias analysis Cochrane Risk of Bias tool.

Strategy of data synthesis All pooled analyses were performed using a random-effects model to provide more conservative estimates and account for potential clinical and methodological heterogeneity across studies.

Subgroup analysis Pre-specified subgroup analyses were conducted based on mean patient age, proportion of male participants, intervention dosage, and follow-up duration.

Sensitivity analysis Sensitivity analyses were performed by sequentially omitting each individual study to evaluate the robustness of the pooled results.

Language restriction No restriction.

Country(ies) involved China.

Keywords Tanreqing injection; acute exacerbation; chronic obstructive pulmonary disease; systematic review; meta-analysis.

Contributions of each author

Author 1 - Zeheng Ma.
Email: a1551657443@163.com
Author 2 - Dongdong Yang.
Email: dongdong5235@126.com
Author 3 - Yunxia An.
Email: 15515786535@163.com