

SYSTEMATIC REVIEW

Efficacy and safety of Yinchenwuling powder for hyperlipidemia: a systematic review and Meta-analysis

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The five trials compared YCWLP with conventional lipid-lowering drugs. Meta-analysis indicated that YCWLP was more effective at the levels of total cholesterol and triglycerides, while increasing the level of high-density lipoprotein cholesterol without serious adverse effects. However, it was not more effective than lipid-lowering drugs in reducing low-density lipoprotein cholesterol and improving hemorheology.

CONCLUSION: YCWLP appeared to improve lipid levels. However, given the high risk of bias among the trials, we could not conclude that YCWLP was beneficial to patients with hyperlipidemia. More rigorous trials are required to provide stronger evidence for the conclusion.

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Key words: Hyperlipidemias; Review; Meta-analysis; Yinchenwuling powder; Randomized controlled trials

Abstract

OBJECTIVE: To assess the clinical effectiveness and adverse effects of Yinchenwuling powder (YCWLP) in the treatment of hyperlipidemia using Meta-analysis.

METHODS: Seven electronic databases were searched for randomized controlled trials designed to evaluate the clinical effectiveness of YCWLP for hyperlipidemia published in any language prior to February 2015. Two reviewers independently identified articles, extracted data, assessed quality, and cross-checked the results. Revman 5.3 was used to analyze the data.

RESULTS: Only five randomized controlled trials with poor methodology were included in the analy-

INTRODUCTION

Hyperlipidemia refers to elevated lipid levels in blood.¹ The condition is also called hyperlipemia, lipemia, or lipidemia, and includes elevated total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), and total triglyceride (TG) levels in the blood.² Hyperlipidemia is a major risk factor for cardiovascular and cerebrovascular disease.^{3,4} Hyperlipidemia can induce atherosclerosis, which can lead coronary heart disease, stroke, and myocardial infarction.^{5,6} Approximately 33.5% of the adult population in the United States has elevated serum cholesterol levels, and millions of people world-

wide are affected.⁷ The incidence of hyperlipidemia is gradually increasing, and may worsen with an aging population. Therefore, the prevention and management of hyperlipidemia is important.⁸ Hypolipidemic agents commonly used in clinic include polyene unsaturated fatty acids, statins, fibrates, nicotinic acids, ezetimibe, probucol, and other compound preparations.⁹ However, almost all of the main lipid-lowering drugs cause side effects. For instance, statins cause myopathy in approximately 10% of patients receiving treatment.¹⁰ An estimated 20% of patients are statin-resistant or intolerant;¹¹ novel treatments are therefore required.

In several Asian countries, such as China, Korea, and Japan, herbs have been widely used in the treatment of hyperlipidemia. The etiology and pathogenesis of hyperlipidemia in Traditional Chinese Medicine (TCM) is pathogenic dampness, a TCM symptom pattern identified in terms of TCM's theory. Because of body fluid Metabolic disturbances, excessive phlegm-dampness stays within the body, affecting blood circulation and causing hyperlipidemia.^{12,13} Based on the symptom pattern identified, and experience from the management of hyperlipidemia with TCM, a specific formula, Yinchewuling powder, was developed. YCWLP is composed of: Yinchen (*Herba Artemisiae Frigidiae*), Guizhi (*Ramulus Cinnamomi*), Fuling (*Poria*), Baizhu (*Rhizoma Atractylodis Macrocephalae*), Zexie (*Rhizoma Alismatis*), and Zhuling (*Polyporus*). YCWLP is widely used alone or combined with lipid-lowering drugs to treat hyperlipidemia in China. Recent studies have shown that YCWLP could obviously decrease the levels of TC, TG, and LDL, increase high-density lipoprotein cholesterol (HDL), reduce blood viscosity, packed cell volume, and platelet adhesion rate, maintain aorta structure, and lower bcl-2 mRNA expression.^{14,15} Furthermore, several clinical studies have reported effectiveness of YCWLP. These studies range from case reports and case series to controlled observational studies and randomized clinical trials. However, critically appraised evidence is not yet available, including systematic reviews or Meta-analyses. Therefore, we aimed to evaluate the beneficial and harmful effects of YCWLP for hyperlipidemia in randomized controlled trials.

METHODS

The protocol of this study was registered in the PROSPERO International prospective register of systematic reviews (http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42015019428).

Inclusion criteria

Types of study. All randomized controlled clinical trials (RCTs) that assessed the effect of YCWLP for hyperlipidemia were included with no language restrictions. All modified YCWLP combinations were also included.

No restrictions on the population characteristics, language, or publication type were imposed.

Types of participant. Patients with hyperlipidemia who were diagnosed with the criteria of "Screening and management of lipids"¹⁶ and any other studies deemed reasonable were included regardless of age, sex, or race of the study participants.

Outcome measures. The primary outcome measures were: TC, TG, LDL, HDL, and adverse events. The second outcome indexes were effective rate and hemodynamic indexes, including high shear rate blood viscosity, low shear rate blood viscosity, and plasma viscosity. The curative effect valuation standards were mainly determined according to the "Chinese Adult Dyslipidemia Prevention Guide."¹⁷ "Effective rate" was defined as TC decreasing by > 10%, TG decreasing by > 20%, or restoration of one of the lipid indexes to normal after intervention. "Invalid" was defined as TC decreasing by < 10%, TG decreasing by < 20%, or restoration of none of the lipid indexes to normal after intervention. "Worsened" was defined as TC or TG increasing by > 10%, or other lipid indexes exceeding the normal levels after intervention.

Search strategy

Literature searches were conducted in the three English electronic databases: Cochrane Central Register of Controlled Trials (CENTRAL) in the Cochrane Library, PubMed, EMBASE, and four Chinese databases: Chinese Biomedical Literature Database (CBM), Chinese National Knowledge Infrastructure (CNKI), Chinese Scientific Journal Database (VIP), and the Wangfang Database for publications dating up to February 2015. First, we checked the subject headings through Mesh database in MEDLINE and we found the subject word for hyperlipidemia as "Hyperlipidemias" and free texts as Hyperlipemia, Hyperlipemias, Hyperlipidemia, Lipidemia, Lipidemias, Lipemia, and Lipemias. There was no subject word for Yinchewuling powder, so we just used the free text as "yinchewuling" and "yin chen wu ling." Finally, we formulated the literature search formula for PubMed as follows:

#1: (Hyperlipidemias[MeSH Terms]) OR Hyperlipemia[Title/Abstract] OR Hyperlipemias[Title/Abstract] OR Hyperlipidemia[Title/Abstract] OR Lipidemia[Title/Abstract] OR Lipidemias[Title/Abstract] OR Lipemia[Title/Abstract] OR Lipemias[Title/Abstract]

#2: ("yinchewuling" [Title/Abstract]) OR "yin chen wu ling" [Title/Abstract]

#3: Random[Title/Abstract]

#4: #1 and #2 and #3

When searching in Chinese databases, we first checked CBM and VIP to retrieve synonyms, and then we formulated the search formula as: ("Gao Zhi Xue Zheng" or "Gao Xue Zhi Zheng" or "Gao Dan Bai Xue Zheng" or "Gao Dan Gu Chun Xue Zheng" or "Gao Gan You San Zhi Xue Zheng") and ("Yin Chen Wu

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