



# Wen Dan Decoction for hemorrhagic stroke and ischemic stroke



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Available online 20 January 2015

## KEYWORDS

Wen Dan Decoction;  
Chinese herbal  
medicine;  
Traditional Chinese  
medicine;  
Ischemic stroke;  
Hemorrhagic stroke;  
Systematic review;  
Meta-analysis;  
Meta-regression  
analysis

## Summary

**Objective:** The use of traditional Chinese medicine (TCM) in stroke is increasing worldwide. Here we report the existing clinical evidence of the Pinellia Ternata containing formula Wen Dan Decoction (WDD) for the treatment of ischemic stroke and hemorrhagic stroke.

**Methods:** PubMed, CNKI, Wan Fang database, Cochrane Library and online Clinical Trial Registry were searched up to 26 February 2013 for randomized, controlled clinical trials (RCTs) using WDD as intervention versus Western conventional medicine as control to treat stroke. Clinical outcomes were improvement of the Neurological Functional Deficit Scores (NFDS) and overall therapeutic efficacy rates including rate of cure. Meta-regression analysis using Hedges'g was performed for RCTs with significant heterogeneity.

**Results:** A total of 22 RCTs of ischemic stroke and 4 RCTs of hemorrhagic stroke, involving 2214 patients (1167 used WDD), met our inclusion criteria. Meta-analysis of the 13 RCTs reporting NFDS improvement favored WDD over the control (mean difference = -3.40, 95% confidence intervals [CI] = [-4.64, -2.15]). Rate of overall therapeutic efficacy (odds ratio [OR] = 3.39, 95%CI = [1.81, 6.37]) for hemorrhagic stroke were significantly higher in WDD treated patients than the control subjects. In the 1898 patients with ischemic stroke, WDD medication also achieved higher rates of cure (OR = 2.22, 95%CI = [1.66, 2.97]) and overall therapeutic efficacy (OR = 3.31, 95%CI = [2.54, 4.31]) than the conventional treatment.

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*Conclusions:* WDD displays benefits on improvement of neurological function and overall therapeutic efficacy in post-stroke patients. TCM such as WDD may serve as a therapeutic tool of dual actions to explore the common mechanisms underlying cerebral hemorrhage and ischemia.  
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## Introduction

Traditional Chinese medicine (TCM) has long been used for maintaining health sustained by dynamic homeostasis.<sup>1</sup> According to TCM theory, the living homeostasis depends on the dynamic balance of the dual *Yin-Yang* forces. The dual forces manifest as hypo-function versus hyper-function. For example, hypotension–hypertension and ischemia-hemorrhage represent the duality of hemodynamic disorders. Western medicine usually relies on different approaches for ischemic stroke and hemorrhagic stroke. In contrast, many specific TCM formula and even single TCM herb can have dual actions like the feeling of happiness–sadness by drinking a same bottle of Chinese liquor. One of the most commonly prescribed formulae for both ischemic stroke and hemorrhagic stroke is *Wen Dan* Decoction (WDD). WDD, documented as early as 652 AD (Tang Dynasty), is one of classic TCM prescription for patients' recovery from critical illness. The WDD formula comprises of *Banxia* (*Pinellia ternata*), *Shengjiang* (Ginger), *Zhuru* (Bamboo shavings), *Zhishi* (Unripe bitter orange), *Chenpi* (Tangerine peel) and *Gancao* (Licorice root). All the six herbs are recorded in the Chinese Pharmacopeia. Papers reporting clinical studies of WDD have often been published in Chinese journals which are not widely read and not highly understood. Hereby we present the existing clinical evidence of WDD for ischemic stroke and hemorrhagic stroke.

## Methods

### Eligibility criteria

#### Types of studies and participants

Randomized controlled clinical trials (RCTs) that evaluated the efficacy of WDD for patients with either ischemic stroke, hemorrhagic stroke or both (i.e. mixed ischemic and hemorrhagic stroke). Clinical diagnosis of stroke met at least one of the following criteria: (1) sudden weakness or numbness of the face, arm or leg, with difficulty walking, speaking and understanding, caused by the interruption of the blood supply to the brain; (2) the World Health Organization (WHO) definition<sup>2</sup>; and (3) the Diagnostic Criteria issued at the Second and Revised at the Fourth National Cerebrovascular Diseases Conference in China.<sup>3</sup> The interruption of the blood supply to the brain was evident by computed tomography (CT) scan or magnetic resonance imaging (MRI). There were no restrictions on patients' gender and age.

#### Types of interventions

The patients of the control group were given Western conventional medicines (WCM) alone, while patients in the treatment groups received WDD therapy. The dosage of WDD ingredient herbs were as follows: *Banxia* 10–15g,

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