

files disorders, hepatic damage, which reflects the characteristics of TCM on antihypertensive effects. The above models have their own characteristics, can be used to study the causes and pathogenesis of hypertension complicating metabolic disorder and the related treatment drug screening.

**Key words:** Hypertension; adverse lifestyles; animal model; traditional Chinese medicine

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## NEUROSCIENCE

### Traditional Chinese herbal medicine for vascular dementia

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**Abstract:** **OBJECTIVE** To systematically review the clinical efficacy and safety on TCHMs that are used for vascular dementia (VaD). **METHODS** To identify studies for systematical review, electronic searches were performed through several databases-ALOIS, CNKI, CBM, Weipu, Wanfang, etc. Only randomized control trials (RCTs) or controlled clinical trials (CCTs) were included. Patients were diagnosed with VaD by diagnostic criteria (DSM, NINDS-AIREN, ICD or HIS) as well as imaging technique (CT, MRI or functional imaging, etc). Eligible TCHMs must be recognized in the *Chinese Pharmacopeia* or the *National Essential Drug List* of the People's Republic of China. Included studies were appraised using the Cochrane Collaboration risk-of-bias criteria. Efficacy and safety outcomes were evaluated by meta-analysis. Efficacy outcomes include cognition, daily function, global performance and behaviour; safety was assessed by the number of adverse events and number of subjects experiencing adverse events. Assessment of heterogeneity, subgroup analysis and sensitivity analysis were also performed. **RESULTS** A total of 46 trials on 29 TCHMs (3522 patients) were included. 45 studies were RCTs and 1 was CCT. In these 45 RCTs, only 2 were appraised as adequately randomised. 5 of 46 trials were appraised as having low risk of bias in blinding. Sample sizes were generally small ranging from 26 to 216 with a median of 68. All trials were conducted in China from 1997 to 2013. All 46 studies assessed cognition using one or a combination of the following scales: MMSE ( $n=40$  studies; 3096 patients), HDS ( $n=22$ ; 1664 patients), ADAS-Cog ( $n=4$ ; 241 patients), CDT ( $n=1$ ; 60 patients) and CCSE ( $n=1$ ; 26 patients). Half of the studies assessed daily function using either the ADL ( $n=22$ ; 1743 patients) or IADL ( $n=2$ ; 203 patients). Only 6 studies measured behaviour using the FAQ ( $n=3$ ; 226 subjects), BBS ( $n=1$ ; 48 patients), NPI ( $n=1$ ; 100 subjects) or Neurological Deficits Function Scale ( $n=1$ ; 91 patients). 30 studies measured global performance. 31 of 46 studies made conclusions regarding the safety of the TCHMs. Despite the problems of methodology and reporting, we can identify three TCHMs-NaoXinTong, Shenfu and Tongxinluo as having relatively stronger evidence of efficacy. There is weak evidence for the safety of TCHMs for VaD. **CONCLUSION** There is weak evidence for the efficacy and safety of TCHMs for VaD because of the poor methodology, short duration of follow-up and inadequate reporting. However the agents appear to be relatively free of severe short-term AEs, hence we encour-

age further better designed and reported trials.

**Key words:** traditional Chinese herbal medicine; vascular dementia; meta-analysis

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## Effects of DL0410 on the learning and memory deficit in APP/PS1 transgenic Alzheimer's disease model mice

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**Abstract:** **OBJECTIVE** DL0410, one novel compound discovered in high throughput screening (HTS), was found to be a potent inhibitor for AChE and BuChE. Memory deficit mice model induced by scopolamine have been conducted to verify its effects on the improvement of memory deficit. In this study, the effects of DL0410 on inhibiting  $\beta$ -amyloid ( $A\beta$ ) aggregation and attenuating cognition and memory impairment of APP/PS1 mice were further investigated. **METHODS** Th-T binding test was used to determine the effect of DL0410 on  $A\beta_{1-42}$  aggregation. In addition, locomotor test, object recognition test, step-down test, and Morris Water maze were performed to investigate the effect of DL0410 on the cognition and memory functions of APP/PS1 mice. **RESULTS** *In vitro* results showed that DL0410 (10 and 30  $\mu\text{mol}\cdot\text{L}^{-1}$ ) could inhibit significantly the monomer  $A\beta_{1-42}$  from aggregation, when incubated together with monomer  $A\beta_{1-42}$  for 24 h ( $P < 0.01$ ). Several behavioral tests demonstrated that DL0410 (10 and 30  $\text{mg}\cdot\text{kg}^{-1}$ ) could shorten latency time in navigation test ( $P < 0.01$ ), increase platform crossing-times in space probe test ( $P < 0.05$ ), and reduce the error times in step-down test ( $P < 0.01$ ). **CONCLUSION** DL0410 could inhibit  $A\beta$  aggregation *in vitro* and alleviate cognition and memory impairment of APP/PS1 mice, which make DL0410 a promising candidate for Alzheimer's disease treatment.

**Key words:** DL0410; Alzheimer's disease; APP/PS1 transgenic mice;  $\beta$ -amyloid; behavioral tests

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## Chinese herbal medicine formula SYM prevents brain calcification in a murine model of IBGC

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**Abstract:** **OBJECTIVE** To establish Idiopathic basal ganglia calcification (IBGC's) disease model in mouse, and investigate the effect of Chinese herbal medicine formula SYM to prevent brain calcification caused by SLC20A2 mutations. **METHODS** In order to apply the IBGC model in mice, we introduced S602W point mutation into the mouse *Slc20a2*. Mice (3 months old) with homozygous mutation developed brain calcification as similar as IBGC in human. The SYM decoction was diluted and added into the drinking water of 2-week-old homozygous *Slc20a2* KI mice for 5 months. Another group of homozygous *Slc20a2* KI mice were set as control and received no treatment. After 5 months, to analyze the effect of the SYM decoction on brain calcification, pathological sections with the brain of *Slc20a2* KI mice were made and stained. **RESULTS** Calcified nodules were not seen in the brain of *Slc20a2* KI mice that received SYM decoction treatment, while the control group developed multiple calcifications in the thalamus region. **CONCLUSION** SYM decoction produced preventive effect on the formation of calcified nod-