

#### 主 管

天津药物研究院

#### 主 办

天津药物研究院 (www.tjpr.com)

中国药学会 (www.cpa.org.cn)

#### 编辑出版

《中草药》编辑部

地址: 天津市滨海高新区滨海科技园

惠仁道 306 号

邮编: 300462

电话: 022-27474913 23006821

网址: www.tjprpress.com

www.中草药杂志社.中国

E-mail: zcy@tjprpress.com

#### 国际标准连续出版物号

ISSN 0253-2670

#### 国内统一连续出版物号

CN 12-1108/R

主 编 陈士林

执行主编 陈常青

## 目 次

### · 化学成分 ·

- 2445 桔梗总皂苷肠道菌转化产物的化学成分及其抗药物性肝损伤活性研究  
彭 昱, 钟渊涵, 万同林, 刘光鹏, 文丽云, 饶建波, 梁 健  
秦 倩, 张寿文, 钟国跃, 曾金祥, 梁永红
- 2456 羊角棉中 1 个新的二萜类化合物及其抗真菌活性  
张瑞函, 秦文秀, 于 硕, 李 畅, 裴月湖, 杨异卉
- 2463 鬼箭羽化学成分研究  
王奕航, 杜雨璇, 郭鑫鑫, 张效威, 薛贵氏, 王 潘, 徐江雁
- 2029 荆芥与肉桂煎煮过程化学成分变化规律及煎煮时间优化  
林家燕, 倪 峰, 熊 颖, 张祥玲, 杨玉磊, 沈 蒙, 商洪才  
缪素芬, 张 玫

### · 药剂与工艺 ·

- 2482 粒度级配设计改善发酵虫草菌粉流动性与吸湿性研究  
万倾兆, 张慧楠, 王生生, 彭旭龙, 彭常春, 许 云  
伍振峰, 王雅琪
- 2493 基于 AHP-熵权法结合 Box-Behnken 设计-响应面法优选大青叶咬咀  
饮片压制工艺  
刘仟禧, 李红伟, 郭志俊, 李 凯
- 2501 基于主成分分析降维-指纹图谱相似度约束的满意度函数值筛选  
二仙汤复合促渗剂  
张 敏, 潘志杰, 王晓琦, 武晓玉, 刘晓霞, 魏舒畅
- 2512 微波炮制与传统炮制对半夏成分、刺激性及镇咳化痰药效影响的  
比较研究  
王 丽, 黄 林, 黎 智, 许润春, 杨 明, 谭 鹏  
张定堃, 贺亚男
- 2523 基于电子鼻和 GC-MS 技术结合相对气味活度值法分析六神曲发酵  
过程中挥发性成分的差异  
肖雅楠, 王 爽, 张 娜, 殷晓雪, 时海燕, 包华音, 徐 男
- 2536 橙皮素与盐酸巴马汀共无定形的制备、表征及体外活性评价  
梁 玲, 李延广, 李 闯, 陈力丰, 张燕杰, 姜本勇

### · 药理与临床 ·

- 2546 基于多组学研究生参皂苷 Rb<sub>3</sub> 抑制巨噬细胞脂质积累的作用机制  
施佳诺, 陈 龙, 高艺桐, 陈 昱, 雷圆圆, 尹 澍  
潘一峰, 章丹丹
- 2558 绞股蓝总苷重塑高脂血症大鼠代谢稳态的代谢组学研究  
徐 睿, 方熙星, 胡泽华, 杨 潇, 周昌园, 刘诗娴, 袁小鹿, 杨 宝
- 2569 基于肾素-血管紧张素-醛固酮系统和 AQP/cAMP/CREB 通路研究  
棉团铁线莲对盐水负荷大鼠的水液代谢作用  
闵志强, 王伟超, 孙荣骏, 廖 立, 陈 林
- 2583 首荟通便胶囊通过调节肠道菌群、抑制 TLR4/MyD88/NF- $\kappa$ B 通路及  
恢复神经递质平衡改善卒中后抑郁  
李若秋, 潘成龙, 王宇婷, 王融融, 曹庆宇, 沈萌萌, 叶 青  
周继栋, 牛德军, 潘丽红, 姚景春, 曾 振, 张贵氏
- 2602 左归降糖解郁方调控小胶质细胞 TREM2/C1q 信号改善糖尿病并发  
抑郁症海马神经元突触丢失的机制研究  
李 中, 蔺晓源, 姜 帆, 姚淑霞, 王宇红, 谭 琥, 刘 检
- 2614 基于 Nrf2 介导的睾丸抗氧化防御探究女贞子及其酒制品对雷公藤  
多苷致生殖毒性的减毒机制  
王 倩, 王君明, 张月月, 巫晓慧, 王彦媚, 弓明珠, 何庆文  
秦玲玉, 杜晨杰, 李琬莹

# 中 草 药<sup>®</sup>

## ZHONGCAOYAO

### Chinese Traditional and Herbal Drugs

第 57 卷 第 7 期 (总第 810 期)

2026 年 4 月 12 日出版

#### 广告合作

中草药杂志社媒体运营部

电话: 022-23006868 23006895

#### 印 刷

天津市恒远印刷有限公司

#### 国内发行

天津市邮政局

#### 订 阅

全国各地邮政局

#### 国外发行

中国国际图书贸易集团有限公司

(100044 北京 399 信箱)

#### 国内邮发代号

6-77

#### 国外邮发代号

M221

#### 定价

每期 60.00 元 全年 1440.00 元

#### 封面图片提供

范佳乐

#### 英文责任编辑

陈雨虹

#### 本期责任编辑

赵慧亮

#### • 数据挖掘与循证医学 •

- 2622 “心合小肠”理论视域下从“肠-心轴”解析肠道菌群与心肌梗死的因果关联及干预中药预测  
宁 博, 党思杰, 吕宸霖, 雷雨轩, 郑张梁, 贾陆明, 罗 成  
杨良滨, 葛 腾, 赵明君, 邹荣军, 彭继海, 范小平
- 2640 基于机器学习与实验验证的缺血性卒中核心机制解析及中药防治策略预测  
廖昊森, 陈翠兰, 马月辉, 顿玲露, 符钰岚, 晏洪恩, 周哲屹
- 2655 五加属植物研究的知识图谱、全球专利及趋势前瞻探析  
魏昕玥, 李思雅, 花海兵, 何润然, 奚飞飞, 王 进, 张宇锋
- 2674 栀子的科学计量学及可视化分析  
惠玉玉, 李亚楠, 严 靓, 张晓宇, 马 龙, 樊改霞, 郑艳侠

#### • 药材与资源 •

- 2691 三七 *GLR* 基因家族鉴定及其不同激素处理表达分析  
李俊良, 杨子涵, 吕文慧, 刘冠泽, 杨生超
- 2704 柴胡 R2R3-MYB 转录因子家族鉴定及其盐胁迫下的表达分析  
陈艳丽, 朱桐杉, 徐国鑫, 李 敏, 刘 姣, 张全芳, 张永清
- 2718 积雪草细胞色素 P450 家族 *CaCYP2* 基因克隆及表达分析  
刘焕英, 雷 明, 肖 潇, 李林轩, 李 翠, 黄 媛, 霍 娟  
万凌云, 潘丽梅, 张占江
- 2730 光质对当归生长特性、主要活性物质积累及关键基因表达的影响  
王佳明, 苏红彦, 李 霞, 吴淑婧, 赵 艳, 栗孟飞
- 2740 基于信息熵最大化联合总量统计矩-熵权 TOPSIS 法的枳实与枳壳化学成分含量差异及精准鉴别研究  
乐 意, 周世欢, 于芷苓, 袁 筱, 吴事捷, 杨 靖, 贺福元, 周 晋

#### • 综 述 •

- 2751 基于植物化学生物网络的中药干预防代谢综合征作用解析及应用探讨  
伏青青, 樊明媛, 姚淇元, 王强艳, 邱 俊, 袁久木  
谢红艳, 高 泓
- 2768 芥子化学成分、药理作用研究进展及其质量相关功效物质预测分析  
李淑贤, 朱紫含, 邵俊然, 丁梦祥, 杨 丽, 杨一帆, 刘文君  
王团结, 王振中, 曹 亮, 肖 伟, 李海波
- 2787 天麻及其上市药品的组方规律与临床应用研究进展  
雷小湖, 李志平, 刘书磊, 陈 琛
- 2799 中药抑制铁死亡治疗脓毒症相关急性肺损伤的研究进展  
范国旗, 陈 琪, 王芳芳, 刘丽伟, 魏 征, 李朵璐, 李晓静  
冯雪琼, 左莉华, 孙 志
- 2809 中医药调控免疫代谢机制研究进展  
田子琦, 宋志前, 林 涛, 王 淳, 杨丰赫, 贺 乔, 王 琛, 宁张弛
- 2825 广防风本草考证、鉴别、药理作用及临床应用研究进展  
邓立芬, 徐雪儿, 黄亦梵, 李华煜, 杨懋勋, 阮永队, 胡显镜
- 2836 失眠症发病机制及中医药防治研究进展  
郁利霞, 邹云娇, 程盼盼, 段昱岑, 王亦舟, 李雨涵, 马 毅, 晋 玲
- 2848 熟地黄防治神经发育和神经退行性疾病的物质基础及其生物学机制研究进展  
裴方好, 吴 吉, 贺思雨, 赵 莎, 张 涤, 李 凡, 雷 倩  
雷东方, 朱沁泉
- 2856 人参皂昔及其合成相关转录因子的研究进展  
周丛叶, 孙文松, 刘 莹, 孙立夫, 张亚玉, 李 旭, 刘子扬

本刊投稿须知见《中草药》2026, 57(1): 390-392.

期刊基本参数: CN 12-1108/R \* 1970 \* sm \* A4 \* 240 \* zh \* P \* ¥ 60.00 \* 3000 \* 34 \* 2026-07

# CHINESE TRADITIONAL AND HERBAL DRUGS

Vol. 57 No. 7 Apr. 2026

## Chinese Traditional and Herbal Drugs

(Semimonthly)

Founded in January, 1970

## Supervisor by

Tianjin Institute of Pharmaceutical Research

## Sponsored by

Tianjin Institute of Pharmaceutical Research

(www.tjipr.com)

Chinese Pharmaceutical Association

(www.cpa.org.cn)

## Edited and Published by

Editorial Office of Chinese Traditional  
and Herbal Drugs

Address: 306# Huirendao, Binhai District,  
Tianjin, China

Post Code: 300462

Tel: +86-22-27474913

Fax: +86-22-23006821

http://www.中草药杂志社.中国

www.tiprpress.com

E-mail: zcy@tiprpress.com

## Standard Number

ISSN 0253-2670

CN 12-1108/R

CODEN CTYAD8

## Editor-in-chief

CHEN Shilin

## Executive Editor-in-chief

CHEN Changqing

## Contents

### • Chemical Constituents •

**2445** Chemical components of intestinal bacterial transformation products from total saponins of *Platycodonis Radix* and their anti-drug-induced liver injury activity  
PENG Yu, ZHONG Yuanhan, WAN Tonglin, LIU Guangpeng, WEN Liyun, RAO Jianbo, LIANG Jian, QIN Qian, ZHANG Shouwen, ZHONG Guoyue, ZENG Jinxiang, LIANG Yonghong

**2456** A new diterpene compound from *Alstonia mairei* and its antifungal activity  
ZHANG Ruihan, QIN Wenxiu, YU Shuo, LI Chang, PEI Yuehu, YANG Yihui

**2463** Chemical composition of *Euonymus alatus*  
WANG Yihang, DU Yuxuan, GUO Xinxin, ZHANG Xiaowei, XUE Guimin, WANG Pan, XU Jiangyan

**2469** Chemical profile dynamics and optimization of decoction time for *Schizonepetae Herba* and *Cinnamomi Cortex*  
LIN Jiayan, NI Feng, XIONG Ying, ZHANG Xiangling, YANG Yulei, SHEN Meng, SHANG Hongcai, MIAO Sufen, ZHANG Mei

### • Pharmaceutics and Technology •

**2482** Study on improving fluidity and hygroscopicity of fermented *Cordyceps* powder by particle size gradation design  
WAN Qingzhao, ZHANG Huinan, WANG Shengsheng, PENG Xulong, PENG Changchun, XU Yun, WU Zhenfeng, WANG Yaqi

**2493** Compression process optimization of *Isatidis Folium* Fujv decoction pieces with AHP-entropy weighting and Box-Behnken design-response surface methodology  
LIU Qianxi, LI Hongwei, GUO Zhijun, LI Kai

**2501** Screening of Erxian Decoction composite penetration enhancers based on satisfaction function value constrained by principal component analysis dimensionality reduction-fingerprint similarity  
ZHANG Min, PAN Zhijie, WANG Xiaoqi, WU Xiaoyu, LIU Xiaoxia, WEI Shuchang

**2512** Comparative study on effects of microwave processing and traditional processing on composition, irritancy, and antitussive and expectorant efficacy of *Pinelliae Rhizoma*  
WANG Li, HUANG Lin, LI Zhi, XU Runchun, YANG Ming, TAN Peng, ZHANG Dingkun, HE Yanan

**2523** Analysis of volatile components differences during fermentation process of *Massa Medicata Fermentata* based on electronic nose and GC-MS combined with relative odor activity value method  
XIAO Yanan, WANG Shuang, ZHANG Na, YIN Xiaoxue, SHI Haiyan, BAO Huayin, XU Nan

**2536** Preparation, characterization and *in vitro* activity evaluation of hesperetin co-amorphous with palmatine hydrochloride  
LIANG Ling, LI Yanguang, LI Chuang, CHEN Lifeng, ZHANG Yanjie, LOU Benyong

### • Pharmacological Studies and Clinical Observations •

**2546** Mechanism of ginsenoside Rb<sub>3</sub> in inhibiting macrophage lipid accumulation based on multi-omics  
SHI Jianuo, CHEN Long, GAO Yitong, CHEN Yu, LEI Yuanyuan, YIN Shu, PAN Yifeng, ZHANG Dandan

**2558** Metabolomic study on reshaping of metabolic homeostasis in hyperlipidemic rats by gypenosides  
XU Rui, FANG Xixing, HU Zehua, YANG Xiao, ZHOU Changyuan, LIU Shixian, YUAN Xiaolu, YANG Bao

**2569** Effect of *Clematis hexapetala* on water metabolism in saline-loaded rats based on renin-angiotensin-aldosterone system and AQP/cAMP/CREB pathway  
MIN Zhiqiang, WANG Weichao, SUN Rongjun, LIAO Li, CHEN Lin

**2583** Shouhui Tongbian Capsule alleviate post-stroke depression by modulating gut microbiota, inhibiting TLR4/MyD88/NF-κB signaling pathway and restoring neurotransmitter homeostasis  
LI Ruoqiu, PAN Chenglong, WANG Yuting, WANG Rongrong, CAO Qingyu, SHEN Mengmeng, YE Qing, ZHOU Jidong, NIU Dejun, PAN Lihong, YAO Jingchun, ZENG Zhen, ZHANG Guimin

**2602** Mechanism of Zuogui Jiangtang Jieyu Formula in improving synaptic loss of hippocampal neurons via regulating microglial TREM2/C1q signaling in diabetes-related depression rats  
LI Zhong, LIN Xiaoyuan, JIANG Fan, YAO Shuxia, WANG Yuhong, TAN Hu, LIU Jian

**2614** Mechanism of *Ligustri Lucidi Fructus* with its wine-processed product on attenuating *Tripterygium wilfordii* polycoride-induced reproductive toxicity based on Nrf2-mediated testicular antioxidant defense  
WANG Qian, WANG Junming, ZHANG Yueyue, WU Xiaohui, WANG Yanmei, GONG Mingzhu, HE Qingwen, QIN Lingyu, DU Chenjie, LI Wanying

## Chinese Traditional and Herbal Drugs

(Semimonthly)

Founded in January, 1970

### Advertising cooperation

Department of Media Operations, Tianjin

Press of Chinese Herbal Medicines

Tel: (022)23006868 23006895

### Printed by

Tianjin Hengyuan Printing Co., Ltd.

### Distribution

Tianjin Post Office

### Subscription Domestic

Local Post Office

### Subscription Overseas

China International Book Trading Corporation,

PO Box 399, Beijing 100044, China

### Publication Date

Apr. 12, 2026

### Editor in Charge of English

CHEN Yuhong

### Editor in Charge of This Issue

ZHAO Huiliang

### · Data Mining and Evidence-Based Medicine ·

- 2622** Exploring causal association between gut microbiota and myocardial infarction from perspective of “gut heart axis” based on theory of “heart small intestine relationship” and predicting intervention with traditional Chinese medicine  
NING Bo, DANG Sijie, LYU Chenqu, LEI Yuxuan, ZHENG Zhangliang, JIA Luming, LUO Cheng, YANG Liangbin, GE Teng, ZHAO Mingjun, ZOU Rongjun, PENG Jihai, FAN Xiaoping
- 2640** Analysis of core mechanisms of ischemic stroke based on machine learning and experimental verification and prediction of traditional Chinese medicine prevention and treatment strategies  
LIAO Haosen, CHEN Cuilan, MA Yuehui, DUN Linglu, FU Yulan, YAN Hongen, ZHOU Zheyi
- 2655** Analysis of knowledge graph, global patents and trend prospect of *Eleutherococcus* plants  
WEI Xinyue, LI Siya, HUA Haibing, HE Runran, XI Feifei, WANG Jin, ZHANG Yufeng
- 2674** Scientometrics and visualization analysis of *Gardeniae Fructus*  
HUI Yuyu, LI Yanan, YAN Jing, ZHANG Xiaoyu, MA Long, FAN Gaixia, ZHENG Yanxia

### · Medicinal Materials ·

- 2691** Identification of *GLR* gene family in *Panax notoginseng* and their expression analysis under different hormonal treatments  
LI Junliang, YANG Zihan, LYU Wenhui, LIU Guanze, YANG Shengchao
- 2704** Identification of R2R3-MYB transcription factor family of *Bupleurum chinense* and expression analysis under salt stress  
CHEN Yanli, ZHU Tongshan, XU Guoxin, LI Min, LIU Jiao, ZHANG Quanfang, ZHANG Yongqing
- 2718** Gene cloning and expression analysis of cytochrome P450 family gene *CaCYP2* from *Centella asiatica*  
LIU Huanying, LEI Ming, XIAO Xiao, LI Linxuan, LI Cui, HUANG Yuan, HUO Juan, WAN Lingyun, PAN Limei, ZHANG Zhanjiang
- 2730** Effect of light quality on growth characteristics, main active substances accumulation, and key genes expression of *Angelica sinensis*  
WANG Jiaming, SU Hongyan, LI Xia, WU Shujing, ZHAO Yan, LI Mengfei
- 2740** Differences in chemical components and precise discrimination between *Aurantii Fructus Immaturus* and *Aurantii Fructus* based on maximum information entropy combined with total statistical moment-entropy weighted TOPSIS method  
LE Yi, ZHOU Shihuan, YU Zhiqin, YUAN Xiao, WU Shijie, YANG Jing, HE Fuyuan, ZHOU Jin

### · Reviews ·

- 2751** Mechanistic analysis and application exploration of traditional Chinese medicine in intervention of metabolic syndrome based on phytochemical networks  
FU Qingqing, FAN Mingyuan, YAO Qiyuan, WANG Qiangyan, QIU Jun, YUAN Jiushu, XIE Hongyan, GAO Hong
- 2768** Research progress on chemical constituents and pharmacological effects of *Sinapis Semen* and its quality-related effective components analysis  
LI Shuxian, ZHU Zihan, SHAO Junran, DING Mengxiang, YANG Li, YANG Yifang, LIU Wenjun, WANG Tuanjie, WANG Zhenzhong, CAO Liang, XIAO Wei, LI Haibo
- 2787** Research progress on compatibility rules and clinical application of *Gastrodia elata* and its marketed preparations  
LEI Xiaohu, LI Zhiping, LIU Shulei, CHEN Chen
- 2799** Research progress on traditional Chinese medicine in treatment of sepsis-associated acute lung injury by inhibiting ferroptosis  
FAN Guoqi, CHEN Qi, WANG Fangfang, LIU Liwei, WEI Zheng, LI Duolu, LI Xiaojing, FENG Xueqiong, ZUO Lihua, SUN Zhi
- 2809** Research progress on mechanism of traditional Chinese medicine regulating immune metabolism  
TIAN Ziqi, SONG Zhiqian, LIN Tao, WANG Chun, YANG Fenghe, HE Qiao, WANG Chen, NING Zhangchi
- 2825** Research progress on herbal textual research, identification, pharmacological effects and clinical applications of *Anisomeles indica*  
DENG Lifan, XU Xue'er, HUANG Yifan, LI Huayu, YANG Maoxun, RUAN Yongdui, HU Xianjing
- 2836** Research progress on pathogenesis of insomnia and prevention-treatment of traditional Chinese medicine  
YU Lixia, ZOU Yunjiao, CHENG Panpan, DUAN Yucen, WANG Yizhou, LI Yuhan, MA Yi, JIN Ling
- 2848** Advances in material basis and biological mechanisms of *Rehmanniae Radix Praeparata* in prevention and treatment of neurodevelopmental and neurodegenerative diseases  
PEI Fangyu, WU Ji, HE Siyu, ZHAO Sha, ZHANG Di, LI Fan, LEI Qian, LEI Dongfang, ZHU Qinquan
- 2856** Research progress on ginsenosides and their biosynthesis-related transcription factors  
ZHOU Congye, SUN Wensong, LIU Ying, SUN Lifu, ZHANG Yayu, LI Xu, LIU Ziyang