

Research Progress of Traditional Chinese Medicine and Western Medicine on Treatment of Post-stroke Depression by Blood-activating and Depression-relieving Chinese Medicine

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Abstract: *Post-stroke depression (PSD), as the most common mood disorder following cerebrovascular events, is characterized by high incidence, significantly impacts patient prognosis, and increases the risk of stroke recurrence. Based on Traditional Chinese Medicine (TCM) theory, this article systematically explores the core pathogenesis of PSD, “interconnected stagnation and depression,” identifying “blood stasis obstructing collaterals” as the fundamental cause and “qi stagnation” as the secondary manifestation. These two factors interact causally, forming a vicious cycle and giving rise to complex syndromes such as phlegm-stasis interconnection. Consequently, the blood-activating and depression-relieving method is proposed as the fundamental therapeutic approach for PSD, with its advantage lying in simultaneously addressing both “stasis” and “depression” to break the pathological cycle. The article further reviews the research progress of four representative blood-activating and depression-relieving herbs: Curcuma (Zanthoxylum) root, Albizia (Albizia) bark, Rose (Rosa) flower, and Salvia (Salvia) root. From historical herbal records to modern pharmacological studies, it elucidates their modern scientific mechanisms: the “blood-activating” effects through anti-platelet aggregation, microcirculation improvement, and neuroinflammation inhibition, as well as the “depression-relieving” effects via modulation of monoamine neurotransmitters and brain-derived neurotrophic factors. Finally, the synergistic relationship between blood-activating and depression-relieving therapies is discussed. The conclusion suggests that the blood-activating and depression-relieving method not only intervenes at the root of PSD’s pathological progression but also promises more durable therapeutic outcomes. Its “blood-activating” effect aligns with secondary prevention strategies for cerebrovascular events, holding significant clinical implications for breaking the “stroke-depression-restroke” vicious cycle and achieving dual physical and mental rehabilitation.*

Keywords: Post-stroke depression, Blood-activating and Depression-relieving Chinese Medicine, “stasis” and “depression”.

1. Introduction

Post-stroke depression (PSD) is the most common mood disorder following cerebrovascular accidents, characterized primarily by persistent low mood, slowed thinking, reduced interest, and sleep disturbances. These symptoms not only impair patients’ quality of life but may also progress to suicidal tendencies over time [1, 2]. Epidemiological studies indicate that more than one-third of stroke patients experience varying degrees of post-stroke depression. Early identification of PSD risk factors and targeted interventions are of significant importance for improving patient outcomes [3]. Depression is an independent risk factor for cardiovascular and cerebrovascular diseases, thereby significantly increasing the likelihood of stroke recurrence in PSD patients [4]. However, the exact mechanisms underlying PSD remain incompletely understood, and its diagnosis in the preclinical stage is often overlooked. This article explores the pathogenic mechanisms of “stasis” and “emotional stagnation” in PSD patients from the perspective of Traditional Chinese Medicine (TCM), highlighting the advantages and research progress of the “activating blood circulation and resolving emotional stagnation” approach in treating PSD.

2. Onset and Progression of Post-Stroke Depression—The Interplay of Stagnation and Depression

2.1 Stroke to Depression—Stasis Obstructs Brain Collaterals, Leading to Malnourishment of Brain Spirit; Stasis Obstructs Qi Mechanism, Resulting in Liver Failure to Disperse and Regulate

The pathogenesis of stroke fundamentally lies in the disorder of qi and blood, leading to stasis in cerebral vessels or extravasation of blood beyond the cerebral vessels, resulting in blood stasis [5]. This “blood stasis” is not only the outcome of stroke but also the root cause of all sequelae and the material basis for the development of post-stroke depression (PSD). The *Inner Canon* states: “When blood vessels are harmonious and unobstructed, the spirit resides.” Human mental and consciousness activities must rely on unimpeded blood vessels to function normally. The cerebral collaterals, which are intricate networks of micro vessels penetrating deep into the brain marrow, serve as the specific pathways and structural foundation for the upward transport of qi, blood, and essence to the brain, enabling the functioning of cerebral consciousness. After a stroke, blood stasis accumulates in the cerebral collaterals, preventing the upward transport of qi, blood, and essence to nourish the “residence of the primordial spirit” [6]. Therefore, the core pathogenesis of post-stroke depression can be summarized as “blood stasis obstructing cerebral collaterals, depriving cerebral consciousness of nourishment.” Blood is the mother of qi and can carry qi; blood stasis inevitably obstructs qi movement, resulting in “qi stagnation.” Generalized qi stagnation first affects the liver’s function of regulating and dispersing emotions. The liver

governs the regulation of emotions; when liver qi stagnates, it fails to regulate emotions, leading to typical “qi stagnation” symptoms such as melancholy, frequent sighing, and chest and hypochondriac distension. Here, “qi stagnation” is directly triggered by “blood stasis.” Stagnant pathological products hinder the generation of new blood, as the saying goes, “old blood not removed, new blood not produced.” Prolonged blood stasis inevitably leads to systemic qi and blood stagnation.

2.2 Post-stroke Depressive Relapse: Stroke—Qi stagnation and Blood Stasis, Stagnation Leading to New Stasis, Overthinking Injuring the Spleen, Phlegm-stasis Intermingling

Following the “stasis-induced depression,” the resulting “depression syndrome” does not passively exist; instead, it exacerbates the degree of “stasis,” forming a complex situation of mutual entanglement between depression and stasis that is difficult to resolve. Post-stroke depressive patients experience emotional distress, leading to liver qi stagnation, which inherently disrupts qi flow. Qi is the commander of blood; when qi moves, blood flows; when qi stagnates, blood stasis occurs. Liver qi stagnation further aggravates pre-existing blood stasis and even generates new blood stasis. This worsens the condition of cerebral collaterals stasis, severely impairing brain nourishment and intensifying depressive symptoms. Excessive “thinking” and “worry” in depressive emotions can impair spleen function. The spleen governs transportation and transformation; spleen deficiency weakens its ability to transform and transport water and dampness, leading to dampness accumulation and phlegm production. The sticky pathological product of phlegm-turbidity combines with pre-existing blood stasis, forming a more stubborn “phlegm-stasis entanglement” syndrome, further obstructing cerebral collaterals and complicating the condition. Patients may exhibit symptoms such as heaviness in the body, chest tightness, epigastric fullness, and thick, greasy tongue coating.

3. Advantages of Blood-Activating and Stasis-Resolving Chinese Herbal Medicines

Therefore, the treatment of post-stroke depression must not merely focus on “depression” and indiscriminately adopt liver-soothing and depression-relieving methods. It is essential to deeply recognize the core pathogenic mechanism of “blood stasis”¹. Only by adopting the therapeutic approach of “activating blood circulation to resolve stasis, relieving depression, and calming the mind” can the vicious cycle between “stasis” and “depression” be broken, thereby achieving fundamental treatment of this condition. This is precisely the theoretical advantage and essence of Traditional Chinese Medicine (TCM) “blood-activating and depression-relieving herbs” in treating this disease. The Western medical mechanism of TCM blood-activating and depression-relieving herbs in treating post-stroke depression primarily involves a multi-target, synergistic process: on one hand, “activating blood” improves cerebral microcirculation, inhibits platelet aggregation, prevents coagulation, and suppresses excessive post-stroke neuroinflammatory responses, thereby creating a favorable environment for brain repair; on the other hand, “relieving depression” regulates the

levels of monoamine neurotransmitters and neurotrophic factors closely related to mood, collectively promoting the recovery of neural function and enhancing neuronal plasticity, ultimately achieving the therapeutic goals of alleviating depressive symptoms and facilitating the repair of neural functional deficits.

4. Research Progress on Monomeric Chinese Medicinal Herbs with Blood-Activating and Depression-Relieving Effects

4.1 Curcuma

The blood-activating effects and processing applications of Curcuma have been documented since the Tang Dynasty. The *Newly Revised Materia Medica* [8] states that it “treats blood stasis, promotes qi descent, promotes tissue regeneration, stops bleeding, and resolves old blood...” The terms “blood stasis” and “resolve old blood” directly describe its blood-activating efficacy. Its depression-relieving effects were explicitly summarized in the Qing Dynasty’s *Compendium of Materia Medica* [9], which defined Curcuma’s functions as “regulating qi, relieving depression, draining blood, and resolving stasis. It cools heart heat and disperses liver depression.” Here, “relieving depression” and “resolving stasis” are listed together, with emphasis on its action on “liver depression,” marking the formal establishment of its “blood-activating and depression-relieving” efficacy. Therefore, modern practitioners use Curcuma to treat post-stroke depression (PSD), achieving both symptomatic and root-cause relief. Additionally, literature mining reveals that Curcuma is one of the common core medications for treating post-stroke depression and is often used as the principal herb in formulations [10].

Modern pharmacological studies have revealed that Curcuma aromatica (Yujin) possesses both antiplatelet aggregation and anticoagulant effects to promote blood circulation and resolve stasis [11], as well as the ability to regulate neurotransmitters, inhibit neuroinflammation, and protect neurons, thereby exerting a soothing and antidepressant effect [12]. Research has demonstrated that the water extract of Curcuma aromatica (WECK) can suppress platelet hyperactivity by reducing the synthesis of thromboxane A₂ (TXA₂), while simultaneously promoting the secretion of prostaglandin E₂ (PGI₂) by endothelial cells, inducing vasodilation and inhibiting platelet aggregation [13]. The active component β -olamphene (54) in Curcuma aromatica (Wen Yujin) also inhibits platelet aggregation via the TXA₂ pathway. Other active components, such as curcumin (18), curcuminoids, and sesquiterpenes, can prolong blood clotting time and induce vasodilation in mice [14], thereby promoting blood circulation and resolving stasis. The antidepressant active component β -sitosterol and sitosterol in Curcuma aromatica (Yujin) act on target receptors such as serotonin receptors and dopamine receptors in depression [15]. Inflammatory responses also play a pivotal role in the pathogenesis of post-stroke depression. Curcumin, the active component in Curcuma zedoaria, exerts its antidepressant effects by modulating pro-inflammatory factors such as PGE₂ and COX-2, as well as through immune regulation via the NF- κ B signaling pathway. Brain-derived neurotrophic factor (BDNF), which is widely distributed in the brain and plays a critical role in synaptic plasticity, is

associated with neuronal plasticity in depression. Curcumin enhances BDNF production, thereby protecting neurons and alleviating depressive symptoms, ultimately achieving an antidepressant effect [16].

4.2 Albizia Bark

The bark of *Albizia julibrissin* (Hehuanpi) has been recognized since the Han Dynasty for its efficacy in harmonizing the mind and soothing emotions. The *Shennong Bencao Jing** [17] records its properties: “It primarily calms the five viscera, harmonizes the mind, and brings joy and peace of mind.” The blood-activating effect of Hehuanpi is relatively mild, and it is often used to reduce swelling in cases of trauma. During the Tang Dynasty, Sun Simiao’s *Beiji Qianjin Yaofang** [18] created the renowned “Twilight Decoction,” which exclusively used Hehuanpi to treat lung abscess, applying its blood-activating and swelling-reducing properties for internal treatment. Modern physicians such as Zhu Guiting [19] and Gao Min [20] have incorporated Hehuanpi into their foundational formulas for treating post-traumatic stress disorder (PTSD), using it to soothe the liver, relieve depression, calm the mind, and promote sleep, while also slightly warming the blood to resolve stasis and unblock the meridians.

The therapeutic effects of Albizia bark on psychiatric disorders primarily involve modulating neurotransmitter systems such as 5-HT, NE, and DA, as well as alleviating oxidative stress and inflammatory responses to improve mood [21]. Dysfunction of monoamine neurotransmitters constitutes the core pathophysiological mechanism underlying the onset and progression of post-stroke depression. Stroke events disrupt neural pathways, induce neuroinflammation, and cause HPA axis dysregulation, leading to imbalances in these critical neurotransmitter systems and subsequent manifestations of emotional, cognitive, and motivational symptoms. Triterpenoid saponins isolated from Albizia bark exhibit potent antidepressant effects [22], with their primary mechanism of action being the enhancement of monoamine neurotransmitter levels [23]. SERT (serotonin reuptake transporter) is a presynaptic membrane protein responsible for the reuptake of serotonin after its release by serotonergic neurons; thus, SERT serves as a molecular target for antidepressants. Huang et al. [24] isolated and characterized two lignan glycosides that non-competitively inhibit serotonin transporter (SERT), indirectly increasing synaptic serotonin levels. While modern pharmacological studies on the blood-activating properties of Albizia bark are limited, its anti-inflammatory and anti-angiogenic functions provide supporting evidence for its traditional blood-activating effects [25,26].

4.3 Roses

The rose was first documented as a medicinal herb in Yao Kecheng’s *Food and Herbal Medicine**, a Ming Dynasty compendium dedicated to food and medicinal applications. The text describes the rose as “a flower that regulates qi, alleviates stagnation, calms the mind, and harmonizes and nourishes blood” [27]. Due to its mild medicinal properties, later physicians often utilized it for both culinary and therapeutic purposes. For instance, *The Dietary Manual of*

Suixiju* [28] states: “It regulates the middle energizer, activates blood circulation, resolves stagnation, dispels foul odors, harmonizes the liver, and can be used in brewing to treat galactorrhea.” It has been widely employed in the treatment of depression and post-stroke depression.

The primary components of rose, volatile oils and brassinolide, exhibit protective effects on cardiovascular and cerebrovascular health [29], while also demonstrating protective effects against cerebral ischemia-reperfusion injury in mice [30]. Rose extract can enhance microarterial blood flow velocity and accelerate the recovery of microcirculatory dysfunction [31], which helps to improve blood circulation in the “stagnation” aspect of post-stroke depression. Studies have found that depression mice treated with *Schisandra chinensis* and rose exhibited reduced colonic inflammation levels and increased hippocampal levels of 5-HT and BDNF, indicating that rose may repair the intestinal mucosal barrier, reduce the release of gut-derived inflammatory mediators, and thereby increase monoamine neurotransmitters in the hippocampus [32]. Research on human and animal gut microbiota has revealed elevated levels of Bacteroidetes and Proteobacteria in the intestines of depressed patients [33,34]. Rose may alleviate depression by inhibiting these microbial populations [35].

4.4 Salvia Miltiorrhiza

The *Treatise on the Properties of Medicinal Herbs* [36] states: “It treats weak legs, painful arthralgia, nausea and vomiting, ghostly pain, abdominal pain, and promotes blood circulation.” The phrase “promotes blood circulation” became a classic summary of Danshen’s blood-activating efficacy in later generations. The *Rihua Zi Materia Medica* [37] records Danshen: “Nourishes the spirit and calms the mind, promotes circulation of the vital meridians. Treats cold-heat exhaustion, bone and joint pain, limb paralysis; drains pus and relieves pain, promotes tissue regeneration, stops bleeding, regulates abnormal menstruation, and alleviates mental agitation caused by blood disorders.” “Nourishes the spirit and calms the mind”: This is the first explicit association of Danshen with mental and emotional regulation. “Calm the mind” refers to stabilizing the spirit, directly addressing symptoms of “stagnation syndrome” such as palpitations, restlessness, and irritability. “Mental agitation caused by blood disorders”: This profoundly highlights that blood disorders can lead to mental symptoms like agitation, clarifying the core pathogenesis of “blood stasis causing stagnation.” Master of Traditional Chinese Medicine Zhang Xuewen was renowned for his clinical use of Danshen in treating various blood stasis syndromes, earning him the elegant title “Zhang Danshen.” Pinellia and Danshen are commonly used combinations in his treatment of stroke with phlegm-stasis obstructing collaterals [38]. Data mining on the treatment of post-stroke depression with traditional Chinese medicine revealed that Danshen is one of the most frequently used blood-activating herbs for post-stroke depression [39].

Regarding “activating blood circulation,” *Salvia miltiorrhiza* (Danshen) can dilate coronary arteries, increase myocardial oxygen supply, while simultaneously slowing heart rate, inhibiting myocardial contractility, and reducing myocardial oxygen consumption, thereby combating myocardial

ischemia [40]. Its protective effect on cerebral ischemic tissue is associated with decreasing the production of thromboxane A2 in brain tissue, inhibiting the release of excitatory amino acids, and improving cerebral microcirculation [41]. In terms of antithrombotic effects, active components of *Salvia miltiorrhiza*, such as salvianolic acid, achieve this through inhibiting platelet aggregation, anticoagulation, and promoting fibrin degradation [42]. Additionally, *Salvia miltiorrhiza* extracts have been demonstrated to alleviate vascular endothelial injury and promote endothelial repair [43]. Regarding “relieving depression”: Studies indicate that multiple active components of *Salvia miltiorrhiza* (e.g., salvianolic acid G, salvianolic acid J, and luteolin) may act on multiple targets, including monoamine oxidase (MAOA), serotonin receptor (HTR2A), and serotonin transporter (SLC6A4), thereby participating in serotonergic pathways, tryptophan metabolism, and estrogen receptor signaling. This comprehensive regulation of neurotransmitter levels contributes to its antidepressant effects [44], providing a modern pharmacological basis for *Salvia miltiorrhiza*’s “depressive relief” efficacy. Furthermore, depressive states caused by chronic stress are often accompanied by hypothalamic-pituitary-adrenal axis dysfunction and central inflammatory responses. Research shows that *Salvia miltiorrhiza* polyphenolic acids can reduce pro-inflammatory cytokines and cortisol levels in patients with cerebral infarction, regulate the glucocorticoid system, and help mitigate neuroinflammation and stress-induced neural damage [45].

5. Interaction Between “activating blood circulation” and “relieving depression”

5.1 The Effect of “activating blood circulation” on Liver Stagnation

One of the core pathogenic mechanisms of post-stroke depression is “blood stasis obstructing the cerebral collaterals.” The brain, as the “residence of the primordial spirit,” requires nourishment from qi and blood to maintain clear and harmonious mental functions. Blood stasis, as a tangible pathological product, obstructs the cerebral orifices, leading to the failure of clear yang to ascend and the malnourishment of the brain spirit, thereby directly causing symptoms of “spiritual depression” such as mental sluggishness, emotional depression, and reduced interest. The blood-activating method directly targets this pathological basis. By eliminating blood stasis in the cerebral collaterals, it enables qi and blood to ascend and nourish the brain, restoring the patency of the cerebral orifices and the function of the brain. “Blood is the mother of qi,” as blood can carry qi. When blood stagnates and fails to circulate, qi also lacks support and passage, resulting in qi stagnation. Patients may experience symptoms of “qi stagnation” such as chest tightness, flank distension, and frequent sighing. Blood-activating and stasis-resolving therapy clears the blood vessels, thereby unblocking the path for qi to circulate. With unobstructed blood flow, the carried qi can disperse accordingly, naturally alleviating the state of qi stagnation.

5.2 The Effect of “Jieyu” on Blood Stasis

“Qi is the commander of blood,” as the circulation of blood

relies entirely on the propulsion of Qi. The liver governs dispersion and regulates the flow of Qi. If liver Qi stagnates, the Qi mechanism becomes obstructed, resulting in insufficient force to promote blood circulation, which may lead to or exacerbate blood stasis. This is referred to as “Qi stagnation leads to blood stasis.” Liver-soothing and depression-relieving herbs can regulate the Qi mechanism throughout the body, particularly the dispersion function of liver Qi. Consequently, they significantly enhance and accelerate the efficacy of blood-activating and stasis-resolving herbs. Without dispersing Qi, the efforts to activate blood circulation are doubled with half the effect. Emotional depression itself is a persistent pathological state that continuously leads to Qi stagnation. As long as the state of “stagnation” persists, it will continuously generate “Qi stagnation,” thereby perpetuating or inducing new “blood stasis,” forming a vicious cycle. The depression-relieving method directly interrupts this vicious cycle. By resolving the state of liver Qi stagnation, it severs the pathological chain of “stagnation leading to stasis” at its source, preventing the condition from further deepening and complicating.

6. Sum Up

Current Western medical treatment for post-stroke depression (PSD) primarily relies on antidepressants and psychotherapy, but these approaches suffer from slow onset, side effects, and suboptimal efficacy in some patients. The Huoxue Jieyu (Blood-Activating and Depression-Relieving) method directly targets the pathological basis and core mechanism of PSD, which is “blood stasis obstructing cerebral collaterals.” It not only alleviates emotional symptoms through “depression relief” but also improves cerebral blood circulation, reduces neuroinflammation, and promotes neural repair via “blood activation,” thereby intervening in the pathophysiological process of PSD at its root. This approach may achieve more fundamental and lasting therapeutic effects, reducing the risk of stroke recurrence and improving overall prognosis. The theory of “mutual entanglement of blood stasis and depression” reveals the intrinsic pathogenesis of the increased stroke recurrence rate in PSD patients. While exerting antidepressant effects, the “blood-activating” actions of Huoxue Jieyu—such as antiplatelet effects, improvement of vascular endothelial function, and plaque stabilization—precisely target secondary prevention of cerebrovascular events. Consequently, it holds promise for breaking the vicious cycle of “stroke-depression-restroke” and achieving dual rehabilitation of neurological and psychological functions.

References

- [1] Lü Deyu, Niu Jiayin, Liu Jun. A network meta-analysis of classical TCM prescriptions for post-stroke depression [J]. *Asia-Pacific Traditional Medicine*, 2025, 21(11):128-137.
- [2] Robinson R G, Spalletta G. Poststroke depression: a review[J]. *Can J Psychiatry*, 2010,55(6):341-349.
- [3] Mitchell A J, Sheth B, Gill J, et al. Prevalence and predictors of post-stroke mood disorders: A meta-analysis and meta-regression of depression, anxiety and adjustment disorder[J]. *Gen Hosp Psychiatry*, 2017,47:48-60.

- [4] Greco A, Occhipinti G, Giacoppo D, et al. Antithrombotic Therapy for Primary and Secondary Prevention of Ischemic Stroke: JACC State-of-the-Art Review[J]. *J Am Coll Cardiol*, 2023,82(15):1538-1557.
- [5] Zhang Yunfan, Zhao Di, Miao Lina, et al. Preliminary exploration of the pathogenesis of stroke with mutual accumulation of phlegm, stasis, and toxin [J]. *Shanghai Journal of Traditional Chinese Medicine*, 2025, 59(12): 20-24.
- [6] Jin Dian, WU Shengxian. Treatment of ischemic stroke based on the theory of 'toxic damage to brain collaterals' [J]. *Journal of Changchun University of Chinese Medicine*, 2025,41(09):970-975.
- [7] Tan Y, Cao Y, Luo MH, et al. Treatment of post-stroke depression by addressing stagnation caused by blood stasis [J]. *Journal of Nanjing University of Chinese Medicine*, 2023,39(06):507-512.
- [8] Authored by Su Jing et al., edited and proofread by Shang Zhijun. *New Revised Materia Medica* [M]. Anhui, 2004.
- [9] Wang A. *Compendium of Materia Medica (Essential Reading Series for Traditional Chinese Medicine Clinicians)* [M]. People's Medical Publishing House, 2012.
- [10] Lei Chaofang, Chen Zhigang, Wang Yueqing, et al. Analysis of the Regularity of Prescription Patterns in Post-Stroke Depression Based on Literature Mining[J]. *Global Journal of Traditional Chinese Medicine*, 2022,15(09):1550-1556.
- [11] Xia Q, Wang X, Xu D J, et al. Inhibition of platelet aggregation by curdione from *Curcuma wenyujin* essential Oil[J]. *Thromb Res*, 2012,130(3):409-414.
- [12] Ma Jianfu, Wang Dou, Li Tao, et al. Advances in the pharmacological mechanisms of *Curcuma* for the treatment of post-stroke depression [J]. *China Journal of Experimental Formulary*, 2022,28(07):276-282.
- [13] Su Yu, Cheng Jing, Liu Zhuqing, et al. Study on the Anti-Thrombotic Effects and Mechanisms of Extracts from *Cinnamomum cassia* and *Curcuma aromatica* [J]. *Journal of Shaanxi University of Traditional Chinese Medicine*, 2019,42(06):80-84.
- [14] Liu M, Guo XH, Sun Q, et al. Advances in the chemical constituents and pharmacological effects of *Curcuma aromatica* [J]. *Modern Drugs and Clinical Medicine*, 2021,36(01):204-208.
- [15] Li L, Chen J, Guo W, et al. Study on the mechanism of action of Chinese medicine *Curcuma aromatica* in treating depression based on network pharmacology [J]. *Journal of Liaoning University of Traditional Chinese Medicine*, 2020,22(02):121-125.
- [16] Fu PY, Zhong J, Liang MK, et al. Research progress on the mechanism of curcumin, the active component of *Curcuma longa*, in treating depression [J]. *Chinese Journal of Traditional Chinese Medicine*, 2020, 38(03): 160-163.
- [17] Shang Zhijun (Ed.). *Shennong Bencao Jing: An Annotated Edition* [M]. Xueyuan Publishing House, 2008.
- [18] Sun Simiao. *Qianjin Fang: Essential Prescriptions Worth a Thousand Gold for Emergencies*. Vol. M. Jilin People's Publishing House, 1994.
- [19] Guo Longen, Su Nan, Chen Qingling, et al. Selected Cases of Zhu Guiting's Treatment of Post-Stroke Depression [J]. *Shandong Journal of Traditional Chinese Medicine*, 2018,37(05):405-408.
- [20] Liao Fujiu, Gao Min. Experience of Gao Min in treating post-stroke depression [J]. *World Journal of Integrated Traditional Chinese and Western Medicine*, 2018, 13(04): 478-481.
- [21] Huang Chenjie, Fan Mingli, Du Xiaona, et al. Advances in pharmacological effects and mechanisms of *Albizia acacia* on mental disorders [J]. *Journal of Drug Evaluation Research*, 2024,47(08):1929-1936.
- [22] Wang X D, Han Q H, Zhang J, et al. Three new triterpenoid saponins from *Albizia julibrissin*[J]. *J Asian Nat Prod Res*, 2019,21(6):535-541.
- [23] Yang S J, Wang J J, Cheng P, et al. Ginsenoside Rg1 in neurological diseases: From bench to bedside[J]. *Acta Pharmacol Sin*, 2023,44(5):913-930.
- [24] Huang B, Liu H, Wu Y, et al. Two Lignan Glycosides from *Albizia julibrissin* Durazz. Noncompetitively Inhibit Serotonin Transporter[J]. *Pharmaceuticals (Basel)*, 2022,15(3).
- [25] Wang Yihan, Sang Xisheng. Research progress on the mechanism of action of *Albizia* bark in treating depression [J]. *China Clinical Health Care Journal*, 2024,27(05):711-716.
- [26] Cai Weiwei, Du Bin, Liu Yanling, et al. Isolation, purification and anti-vascular activity study of saponins from *Albizia julibrissin* [J]. *West China Journal of Pharmacy*, 2016,31(06):617-619.
- [27] Chen Honglin, Sun Qi, Luo Yanhui, et al. A Study on the Medicinal Properties of Rose [J]. *Henan Journal of Traditional Chinese Medicine*, 2025,45(12):1929-1936.
- [28] Wang Shixiong. *Sui Xi Ju Yin Yi Pu* [M]. China Commercial Press, 1985.
- [29] Yuan CSheng, Chen W. Study on the Synergistic Effects and Mechanisms of Rose Flavonoids and Essential Oils in Preventing and Treating Cardiovascular Diseases Based on TCMSP [J]. *Journal of Shihezi University (Natural Sciences Edition)*, 2016,34(06):731-738.
- [30] Xiang Liling, Feng Yu, Miao Mingsan, et al. Effects of total rose flavonoids on focal cerebral ischemia model in mice [J]. *China Modern Applied Pharmacy*, 2018, 35(01): 76-79.
- [31] Wang Junle, Xiang Jiang, Jiqiang Wang, Yan Wang, Shijun Wang. Effects of total rose extract on mesenteric microcirculation in mice [J]. *Shandong Biomedical Engineering*, 1997(04):20-23.
- [32] Zhang T, Ren Y, Li L, et al. Mechanistic study on the effects of *Schisandra chinensis* and rose on improving inflammatory levels in depression mice by repairing intestinal barrier[J]. *Journal of Shaanxi University of Science and Technology*, 2023,41(03):62-70.
- [33] Liu S, Guo R, Liu F, et al. Gut Microbiota Regulates Depression-Like Behavior in Rats Through the Neuroendocrine-Immune-Mitochondrial Pathway[J]. *Neuropsychiatr Dis Treat*, 2020,16:859-869.
- [34] Yismin, Luchenghao, Weng Feihong, et al. Research progress on the effects of different nutrients on depressive disorders [J]. *China Journal of Neuropsychiatric Diseases*, 2023,49(10):620-624.
- [35] Yin Shijie. Preliminary exploration of antidepressant activity and mechanisms of rose flavonoids based on metabolomics and gut microbiota [D]. *Shandong University of Traditional Chinese Medicine*, 2024.

- [36] Tang Zhenquan, Shang Zhijun. Shang Zhijun. Theory of Drug Properties: Classification of Drug Properties and Their Tendency. Annotated Edition [M]. Anhui Science and Technology Press, 2006.
- [37] Collected by Rihua Zi, with annotations by Shang Zhijun. Rihua Zi's Materia Medica [M]. Anhui Science and Technology Press, 2005.
- [38] Yan Yafeng, Zhang Qi, Zhou Haizhe, et al. Commonly used drugs for treating blood stasis syndrome by Master of Traditional Chinese Medicine Zhang Xuewen [J]. Chinese Journal of Traditional Chinese Medicine, 2020,35(12):6108-6110.
- [39] Zhong Yuan. Study on medication patterns of traditional Chinese medicine for post-stroke depression based on data mining [D]. Liaoning University of Traditional Chinese Medicine, 2020.
- [40] Yin J, Wu Q, Liu CP, et al. Pharmacological effects of effective components of *Salvia miltiorrhiza* in cardiovascular diseases [J]. Advances in Anatomy Science: 1-7.
- [41] Wang Qixiu, Zhang Wei, Zhou Hongfei, et al. Pharmacological effects and clinical application of the main active components of *Salvia miltiorrhiza* and *Ligusticum chuanxiong* in the treatment of ischemic stroke [J]. Chinese Journal of Traditional Chinese Medicine, 2026,44(01):208-214.
- [42] Wang Y. Study on the Anti-thrombotic Activity, Mechanism of Action, and Stability of Active Components in *Salvia miltiorrhiza* [D]. Shandong University, 2022.
- [43] Li Zibo, Zheng Yaqiu. Advances in the pharmacological mechanisms of *Salvia miltiorrhiza* and its active components in regulating vascular endothelial cell function [J]. Chinese Herbal Medicine, 2025, 56(14): 5324-5332.
- [44] Wang X, Shi YY, Wan MX, et al. Research progress on the pharmacological effects of effective components of *Salvia miltiorrhiza* and their preparations as antidepressants [J]. Drug Evaluation Research, 2025, 48(02): 296-306.
- [45] Gong Yuanyuan. Effects of Danshen polyphenolic acids combined with butylphthalide on neurological function and inflammatory factor levels in patients with acute cerebral infarction [J]. Reflexology and Rehabilitation Medicine, 2025, 6(07): 101-104.