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Exploring the Mechanism and Clinical Application of Polygonum Cuspidatum and Herbaceous Rhizoma Herbal Medicine in the Treatment of Psoriatic Arthritis based on "Clearing Away Heat and Detoxifying, Activating Blood Circulation and Unblocking Meridians"

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Abstract: ***Psoriatic arthritis (PsA) is a chronic heterogeneous autoimmune disease secondary to psoriasis. It has dual lesions of scaly skin lesions and erosive arthritis. It belongs to the categories of "white boils", "Bi syndrome" and "Lijie disease" in traditional Chinese medicine. The core pathogenesis of the disease in the active stage is that heat poison accumulates blood, blood stasis blocks the meridians, and poisons and blood stasis cement each other: the heat poison burns the blood, and when it penetrates the skin, it causes erythema, hypertrophy, scales and itching; blood stasis blocks the muscles and joints, resulting in red, swollen, hot and painful joints, and morning stiffness and deformity; the heat poison tortures the blood and causes blood stasis, and the blood stasis for a long time regenerates the fire poison, forming a vicious cycle, which is the fundamental reason for the recurrence of the disease and the progressive destruction of bones. Polygonum cuspidatum and Hedyotis diffusa are classic medicinal pairs commonly used in rheumatology, immunology and dermatology. They are closely related to the core pathogenesis of PsA poison and blood stasis, and together they have the functions of clearing away heat and detoxification, cooling blood and dispersing blood stasis, activating blood circulation and dredging collaterals, diuresis and purging turbidity. Modern pharmacology has confirmed that polydatin, resveratrol, and emodin in Polygonum cuspidatum can inhibit the NF-κB and NLRP3 inflammasome pathways at multiple targets, downregulate key pro-inflammatory factors such as TNF-α, IL-6, IL-17, and IL-23, and also regulate the renal uric acid transporter., inhibit the HIF-1α/VEGF pathway to reduce the formation of synovial pannus; the iridoid glycosides and flavonoids contained in Hedyotis diffusa can inhibit abnormal activation of $CD4^+$T cells, regulate Th17/Treg immune balance in two directions, and have antioxidant, diuretic and detoxification effects. The combination of the two medicines can clear away toxins without stagnation of Qi and blood, activate blood circulation and dissipate blood stasis without depleting healthy Qi, achieve simultaneous regulation of skin and joints, and dual intervention of local inflammation and systemic immune disorders. This article comprehensively discusses the etiology and pathogenesis of traditional Chinese medicine, theory of drug pair compatibility, basis of active substances, molecular synergy mechanism, clinical application of syndrome differentiation, integrated traditional Chinese and Western medicine programs, existing research shortcomings and future scientific research directions. It systematically combs the scientific connotation of polygonum cuspidatum-white flower snake tongue herbal medicines in the intervention of PsA, and provides a complete theoretical basis and clinical practical reference for the syndrome differentiation and treatment of this disease with traditional Chinese medicine, synergism and detoxication, and new drug development.***

Keywords: Psoriatic arthritis, Polygonum cuspidatum, Hedyotis diffusa, Medicinal pair, Clearing away heat and detoxifying, Promoting blood circulation and unblocking collaterals, Th17/Treg immune balance.

1. Introduction

Psoriatic arthritis belongs to the seronegative spondyloarthropathy spectrum. Epidemiological data show that 20% to 30% of psoriasis patients worldwide can progress to PsA, and the domestic incidence rate is increasing year by year. The disease can involve the distal interphalangeal joints, large joints of the limbs, spine and tendon attachment points. More than half of the patients develop irreversible bone erosion and joint deformity within 2 years of onset, significantly reducing the patient's working ability and quality of life, and long-term treatment brings a heavy economic burden [1].

The current treatment system of Western medicine is divided into three levels: first-line non-steroidal anti-inflammatory drugs can only relieve swelling and pain in the short term, but cannot block bone destruction; second-line traditional disease-improving anti-rheumatic drugs (methotrexate, leflunomide) are slow to take effect and carry risks of liver damage and bone marrow suppression; third-line IL-17. IL-23 and TNF-α targeted biological agents have outstanding efficacy, but they have limitations such as primary/secondary drug resistance, long-term infection risk, high price, and high recurrence rate after drug withdrawal. 30% to 40% of moderate to severe patients cannot achieve ideal disease remission [2-3].

Traditional Chinese medicine is characterized by overall syndrome differentiation, multi-pathway regulation, and mild side effects, and has significant advantages in the full management of PsA. Combining the characteristics of skin lesions and joint diseases, doctors of the past dynasties proposed that "heat, poison, blood stasis, and dampness" are the four core pathological factors of the disease. In the active stage, heat, poison, and blood stasis are the main

contradictions. Polygonum cuspidatum and Hedyotis diffusa are bitter, cold and clearing. Used alone, they can respectively improve heat paralysis and blood-heat white boils. Used in combination, they can simultaneously remove toxins from the blood and dredge meridian stasis. In recent years, they have been widely used clinically in the intervention of active heat-toxic stasis-type PsA [4-5].

Most of the existing literature focuses on the anti-inflammatory mechanism of single medicinal herbs or the study of simple psoriasis skin lesions. There is a lack of systematic and integrated discussion on the treatment of PsA by Polygonum cuspidatum and Herbal Herbs Alba. There is no complete explanation of their compatibility and synergistic targets, standardized syndrome differentiation indications, and hierarchical integration of traditional Chinese and Western medicine strategies. Based on this, this article takes the treatment principle of "clearing away heat and detoxifying, activating blood circulation and unblocking collaterals" as the core main line, and analyzes the theoretical, pharmacological and clinical value of this drug in the treatment of PsA at multiple levels and in an all-round way to make up for the shortcomings of existing research discussions.

2. Systematic Analysis of TCM Etiology and Pathogenesis of PsA

2.1 Heat Poison Hidden Blood is Divided into Core Causes of Skin Lesions

The skin manifestations of PsA are characterized by bright red plaques, thick layers of silvery-white scales, burning and itching, which are aggravated by heat and are lighter in winter and heavier in summer. It is a typical blood-heat toxin syndrome. "Treatise on the Causes and Symptoms of Diseases" first proposed that ringworm is caused by rheumatism in the interstitium and blood and Qi; "Dacheng of Surgery" added that the pathogenesis of white boils is wind evil causing blood dryness and lack of nourishment; modern Chinese medicine combines the immune and inflammatory characteristics of this disease to improve the core theory of blood heat and poison [6].

The causes of disease are divided into two categories: internal causes and external causes: internal causes are mostly congenital yang constitution, long-term addiction to spicy alcohol, rich and sweet flavors, loss of spleen and stomach transportation and transformation, internal stagnation and heat, which will turn into fire and poison over time; external causes include exogenous wind-heat and dampness, emotional depression and anger turning into fire, fatigue and consumption of yin blood, internal and external harmonization, and evil poisons invade the nutrient blood. The heat poison forces the blood to flow freely, and the skin veins become full and expanded, and erythema is exposed; excessive heat consumes Yin fluid, the skin loses moisture, and dry wind grows in the body, causing scales to pile up; the heat poison is deep in the blood veins, making it difficult to completely eradicate it. Once the trigger is felt, the poison heat will rekindle, and the skin damage will be repeated and delayed.

2.2 Blood Stasis and Obstruction of Meridians is the Key Pathology of Joint Swelling and Pain

PsA joint lesions belong to the categories of "heat arthralgia" and "lijie" in traditional Chinese medicine, which are different from wind-cold-damp arthralgia, cold pain, and spasm. This disease is characterized by joint redness, swelling, burning, stabbing pain, aggravation at night, and morning stiffness >30 minutes as the hallmark signs of blood stasis and heat. Wang Qingren's "Yi Lin Gai Cuo: Theory of Bi Syndrome with Blood Stasis" clearly states: Bi syndrome cannot be cured after long-term treatment, which is caused by stagnation of Qi and blood and blood stasis blocking the collaterals [7].

Heat toxins accumulate in the blood for a long time, tormenting body fluids, and the blood becomes thick and stagnant, resulting in blood stasis; heat evil blocks the qi machine, causing qi and blood to not flow smoothly, further aggravating the blockage of blood vessels; blood stasis stagnates between joints, fascia, and bone seams, and the qi and blood in the meridians are blocked, causing pain. Heat poison and blood stasis form a two-way vicious cycle: heat poison is the initiating factor in the generation of blood stasis, and blood stasis blocks the movement of qi and blood, causing stagnation and heat transformation, which breeds deep-seated toxins.

2.3 Overall Pathogenesis Characteristics of Toxin-Stasis Co-Morbidity and Integration of Skin and Bone

The core feature of PsA that distinguishes it from simple white boils and simple paralysis syndrome is that skin lesions and joint lesions advance and retreat simultaneously and come from the same source: when the heat and poison in the blood floats on the muscle surface, the skin lesions break out, and when it penetrates into the meridians and blood stasis is blocked, the joint inflammation worsens; after treatment, the heat and poison gradually clear and the blood stasis dissipates, the skin and joint symptoms are relieved simultaneously. This establishes the core treatment principle: clearing heat and detoxifying, activating blood circulation and dredging collaterals must be done simultaneously. If you only clear away heat and detoxify, it will not be able to dissipate long-term blood stasis in the meridians, and joint swelling and pain will be difficult to eradicate; if you simply activate blood circulation and remove blood stasis, it will not be able to clear away the toxins in the blood, and skin lesions will easily recur. Only by detoxifying and activating blood circulation simultaneously, and cutting off the pathological chain of poison and blood stasis, can we achieve both specimen and specimen consideration.

3. Interpretation of Compatibility Theory of Polygonum Cuspidatum - Hedyotis Diffusa Herb Pair

3.1 Properties, Flavors, Meridian Tropisms, Efficacies and Indications of Single Herbs

3.1.1 Polygonum Cuspidatum

Polygonum cuspidatum tastes bitter, is cold in nature, and enters the liver, gallbladder, and lung meridians. "Ming Yi

Bie Lu" (Supplementary Records of Famous Physicians) records that it "mainly promotes menstrual flow and breaks up retained blood masses"; "Ben Cao Gang Mu" (Compendium of Materia Medica) records that this herb "clears heat-toxin, dissipates blood stasis, dredges meridians, and promotes urination and defecation" [8]. It has four functions: 1) Clears blood and separates heat and toxins, relieves skin erythema and burning; 2) Promotes blood circulation and removes blood stasis, unblocks collaterals and relieves pain, improves joint swelling and pain; 3) Diurets dampness and purges turbidity, promotes dampness, heat and toxic evils to come out from the urine; 4) Clears the bowels and purges heat, removes fire from the bottom of the cauldron and clears out internal fire toxins. This product enters the blood and travels through the meridians, and can treat both skin and bone diseases. It is the core drug for treating the comorbidities of heat, poison and blood stasis.

3.1.2 Hedyotis Diffusa

Hedyotis diffusa tastes slightly bitter and sweet, is cold in nature, and enters the stomach, large intestine, and small intestine meridians. "Guang Xi Zhong Yao Zhi" (Guangxi Chinese Medicine Records) records that this herb "treats sores and abscesses, heat arthralgia, clears blood heat, and dissipates stasis and swelling" [9]. Its core efficacies are deeply clearing latent toxin in the blood, cooling blood and eliminating macules, promoting diuresis and treating stranguria. Its property is clearing without stagnation, cold without damaging healthy qi, and it is good at dispelling persistent damp-heat fire-toxin. It guides toxin downward through promoting diuresis and excreting dampness, providing a way for evil toxin to escape, and is mostly used for intractable blood-heat rashes and red, swollen and hot arthralgia.

3.2 Connotation of Mutual Assistance and Synergy in Herb Pair Compatibility

The two herbs have clear division of labor and complementary benefits in compatibility, forming a combination of "one clearing and one activating, treating both symptoms and root causes":

1) Hedyotis diffusa is a fundamental medicine: it specializes in removing deep-seated toxins in the blood, cutting off the source of heat and poison, reducing blood stasis from the root, improving skin erythema and systemic heat;

2) Polygonum cuspidatum is a temporary medicine: specializing in dredging blood stasis in meridians, dispersing joint problems, improving local microcirculation, relieving joint swelling and pain in the morning, and assisting in defecation and accelerating the elimination of toxins.

3) Compatibility advantages: It can clear away heat and detoxify without the disadvantages of stagnant cold and coolness, activate blood circulation and dissipate blood stasis without the risk of consuming yin blood; it can not only remove existing heat toxins and dissipate blood stasis, but also block the vicious cycle of "heat toxins cause blood stasis, and blood stasis transforms into toxins over time". It is in line with the traditional Chinese medicine idea of cutting off the pathogenesis of the disease before it is diagnosed, and is perfectly suitable for the pathogenesis of PsA where poisons and blood stasis are intertwined and the skin and bones share the same disease.

4. Active Substance Basis and Modern Pharmacological Synergistic Mechanism of the Herb Pair

4.1 Core Active Components and Multi-Target Pharmacological Effects of Polygonum Cuspidatum

The medicinal substances of Polygonum cuspidatum are divided into three categories: stilbenes, anthraquinones, and flavonoids. Resveratrol, polydatin, emodin, and rhein are the core blood-entering active ingredients. They intervene in the four pathological links of PsA inflammation, immunity, bone destruction, and metabolic disorders through multiple pathways [10].

1) Inhibits the dual inflammatory pathways of NF-κB and NLRP3 and blocks the inflammatory cascade reaction. The NF-κB pathway mediates the release of broad-spectrum inflammatory factors throughout the body, and the NLRP3 inflammasome is a key initiating target for local cartilage damage in the synovium and joint redness and swelling. Resveratrol inhibits the expression of NLRP3, ASC, and caspase-1 proteins, reduces the release of IL-1β and IL-18, and blocks the local inflammation cascade in joints; polydatin inhibits NF-κBp65 nuclear translocation, downregulates TNF-α, IL-6, and IL-8, reduces systemic inflammatory load, and dually inhibits inflammatory infiltration in skin and joints [11-12].

2) Excessive proliferation of Th17 cells and defective Treg function are the core mechanisms of PsA autoimmune disorder. Resveratrol inhibits the phosphorylation of STAT3, downregulates the Th17 transcription factor RORγt, and reduces the secretion of IL-17A and IL-23; it also upregulates Foxp3 to promote Treg differentiation and rebuild the body's immune tolerance. The target of action is highly overlapped with clinical IL-17/IL-23 biological agents, and has synergistic potential [13-14].

3) Regulate renal uric acid transporter and improve hyperuricemia. The prevalence of hyperuricemia in PsA patients is significantly higher than that in healthy people. Uric acid crystals aggravate synovial inflammation and accelerate bone erosion. Emodin and rhein down-regulate renal URAT1 and GLUT9 reabsorption proteins, up-regulate OAT1 excretion protein, promote uric acid excretion in urine, inhibit the release of inflammatory factors induced by uric acid, and balance anti-inflammatory and metabolic regulation [15].

4) Down-regulating the HIF-1α/VEGF pathway inhibits the formation of synovial pannus, abnormal synovial proliferation, and pannus invasion of cartilage, which are the core pathologies of irreversible joint deformities. The active ingredients of Polygonum cuspidatum can inhibit the expression of hypoxia-inducible factor HIF-1α, reduce the secretion of downstream VEGF, block synovial neovascularization, and delay the process of bone erosion

[16].

4.2 Core Active Components and Pharmacological Effects of Hedyotis Diffusa

The main active substances of Hedyotis diffusa are iridoid glycosides (triverine, deacetylated trifoliate), flavonoids (quercetin, kaempferol), and phenolic acids. Its pharmacological advantages focus on systemic immune regulation, antioxidant, diuretic and detoxification, and are complementary to Polygonum cuspidatum [17].

1) Inhibits the activation of $CD4^+$T cells and synergistically restores Th17/Treg homeostasis. Total glycosides of Hedyotis diffusa can inhibit the abnormal proliferation and activation of $CD4^+$T lymphocytes, directly downregulating the expression of IL-17, IL-23, and TNF-α. It also induces the differentiation of Treg cells, and when combined with Polygonum cuspidatum, it greatly increases the intensity of immune regulation, reduces the state of continuous activation of autoimmunity, and reduces the recurrence of the disease [18].

2) Scavenge oxygen free radicals and antioxidant protect skin and cartilage tissue. Flavonoids can increase the body's SOD and GSH-Px antioxidant enzyme activities, scavenge ROS oxidative free radicals, reduce skin stratum corneum hypertrophy, synovial congestion, and chondrocyte apoptosis caused by oxidative stress, and protect normal tissue structure [19].

3) Diuresis and turbidity, accelerating the excretion of inflammatory metabolites. Modern pharmacology has confirmed that Hedyotis diffusa extract can increase renal blood flow, increase urine output, accelerate the excretion of inflammatory metabolic wastes, dampness, heat and turbid toxins in the body, and reduce the accumulation of systemic inflammation, which corresponds to the theory of "diminishing dampness, detoxifying and giving evil outlets" in traditional Chinese medicine [20].

4.3 Summary of the Overall Synergistic Mechanism Between Polygonum Cuspidatum and Herbal Rhizoma Rhizoma.

Dimensions of action Action target of Polygonum cuspidatum Action target of Hedyotis diffusa Synergistic effect Inflammation inhibits NF-κB and NLRP3 pathways, local synovial anti-inflammatory T cell activation, and systemic Th17 inflammatory factor dual pathways are fully covered to avoid inflammation escape caused by inhibition of a single pathway, and synchronized relief of skin lesions and joint inflammation Immunomodulation inhibits STAT3/RORγt, promotes Treg differentiation, inhibits $CD4^+$T proliferation, induces Treg production to double repair Th17/Treg imbalance, strengthens immune tolerance, reduces the risk of recurrence, improves local pathology, improves microcirculation, inhibits pannus, relieves pain, reduces swelling, and resists oxidation. Protect cartilage and skin cells, activate blood circulation, increase blood drug concentration in lesions, detoxify and reduce local tissue damage, double the local effect of metabolism and detoxification, promote uric acid excretion, relieve heat, diuresis and detoxification, remove inflammatory turbidity, remove pathogenic metabolites through multiple channels, and improve PsA combined with metabolic abnormalities.

Macro compatibility logic: Polygonum cuspidatum Huoxuetong The collaterals open up the channels of Qi and blood, and improve the distribution and utilization rate of the detoxifying ingredients of Hedyotis diffusa in skin and joint lesions; Hedyotis diffusa removes toxins from the whole body, reduces the heat toxins that continue to refine blood and cause blood stasis, reduces the burden of Polygonum cuspidatum to remove blood stasis, and forms a virtuous cycle of clearing and clearing, and the overall efficacy is significantly better than that of a single medicine alone.

5. Clinical Syndrome Differentiation, Medication Specifications, and Layered Integration of Traditional Chinese and Western Medicine Programs

5.1 Applicable Syndrome Types, Key Points for Syndrome Differentiation and Exclusion Indications

5.1.1 Indicated Syndrome Types

Syndrome of heat, toxin and blood stasis in the active stage of psoriatic arthritis (the first choice of drug pair in the active stage of PsA, elevated inflammatory indicators, and synchronized attacks of skin lesions on joints)

5.1.2 Key Points of Syndrome Differentiation and Diagnosis

Main symptoms: (1) joints are red, swollen, hot, tingling, morning stiffness ≥ 30 minutes, limited flexion and extension; (2) skin lesions are bright red or dark red in color, with thick scales, itching and burning, and new rashes continue to increase. Co-morbidities: dry mouth, bitter mouth, irritability, insomnia, short yellow urine, dry and hard stools, and body heat. Tongue and pulse: red or dark red tongue, petechiae and ecchymoses scattered on the tip of the tongue, yellow or greasy tongue coating; slippery, astringent, stringy pulse. Objective laboratory reference: ESR and CRP increased significantly, and blood uric acid levels increased in some patients.

5.1.3 Cautious and Contraindicated Populations

(1) Use with absolute caution: Pregnant women and menstruating women (Polygonum cuspidatum activates blood circulation and promotes diarrhea, so there is a risk of bleeding); (2) Not suitable for use alone: cold-dampness syndrome (cold joint pain, relieved by warmth, fear of cold and loose stools, pale tongue and white coating), simple blood deficiency and wind-dryness in the resting phase PsA (no redness, swelling, heat and pain, normal inflammation indicators); (3) It can be used after being combined with stomach protection: people with spleen and stomach deficiency, long-term anorexia and loose stools.

5.2 Standard Dosage, Decoction Standardization and Individualized Modification

5.2.1 Conventional Dosage

Polygonum cuspidatum: 10-30g, clinical recommendations are to start with a small dose of 10g, and observe the stool every day. If the stool is loose and exceeds 2 times a day, reduce the dose; for those with dry stool and excessive heat, poison, and internal organs, the dosage can be increased to 20-30g. Hedyotis diffusa: 15 to 30g; increase to 30 to 45g for those with severe heat poisoning, widespread skin lesions, and severe joint redness and swelling. Decoction method: 1 dose per day, soak in cold water for 30 minutes, boil over high heat, then decoct over low heat for 25 minutes, take 400mL of medicinal solution, take it warmly after breakfast and dinner to reduce bitter cold and irritate the gastrointestinal tract.

5.2.2 Syndrome-Based Modified Compatibility

1) Severe heat and toxins (skin lesions are bright red, the whole body is burning, and CRP is significantly increased): add Rehmannia glutinosa, peony bark, Lithospermum sinensis, honeysuckle, and forsythia to enhance cooling blood, detoxify and eliminate spots;

2) Severe blood stasis (joint pain worsens at night, large ecchymoses on the tongue, and long course of disease): add Salvia miltiorrhiza, red peony root, Millet Spatholobus, and peach kernels to strengthen blood circulation, dredge collaterals, and relieve pain;

3) Excessive dampness and turbidity (Joint effusion and swelling, thick and greasy tongue coating, and heavy limbs): Add Smilax cocos, raw coix seed, Atractylodes, and Alisma to relieve dampness, reduce swelling, and relieve turbidity;

4) Severe itching of the skin: add white fresh peel, Kochia bark, Sophora flavescens, Fangfeng, dispel wind and relieve itching; 5. Deficiency of the spleen and stomach, diarrhea and anorexia after taking medicine: add stir-fried Atractylodes macrocephala, Poria cocos, tangerine peel, and roasted licorice to strengthen the spleen and stomach and protect the middle Jiao.

5.3 Daily Diet and Living Care

During the period of taking the medicine, you should strictly avoid spicy foods, beef and mutton, seafood, spirits and other warm and spicy foods to avoid heat and poison; work and rest regularly to avoid staying up late and overexertion to reduce emotional outbursts; moderate low-intensity joint exercises to prevent meridian stasis from aggravating swelling and pain.

5.4 Stratified Integrated Traditional Chinese and Western Medicine Diagnosis and Treatment Strategy

5.4.1 Moderate to Severe Active Stage PsA (Significantly elevated ESR and CRP, multiple joint involvement)

During the period of taking the medicine, you should strictly avoid spicy foods, beef and mutton, seafood, spirits and other warm and spicy foods to avoid heat and poison; work and rest regularly to avoid staying up late and overexertion to reduce emotional outbursts; moderate low-intensity joint exercises to prevent meridian stasis from aggravating swelling and pain.

5.4.2 Mild PsA / Population Intolerant to Western Medicine (Single joint swelling and pain, a small amount of skin lesions, slightly elevated inflammatory indicators)

Discontinue or reduce the dosage of western medicine, use Polygonum cuspidatum - Hedyotis diffusa syndrome differentiation formula alone for treatment, review ESR and CRP every 2 weeks, dynamically adjust the dosage, and monitor gastrointestinal and liver functions throughout the process.

5.4.3 Consolidation Treatment in Disease Remission Stage (Joint swelling and pain subsided, skin lesions basically healed, normal inflammatory indicators)

Reduce the dosage of the medicine: Polygonum cuspidatum 10g, Hedyotis diffusa 15g, take 3 to 4 doses per week for 1 to 3 months to clear the residual toxins, clear the remaining blood stasis in the collaterals, and reduce the probability of short-term recurrence of the disease.

6. Current Research Limitations and Future Scientific Research Prospects

6.1 Shortcomings of Existing Research

1) Basic experimental level: Existing pharmacological data are mostly based on single drugs and common inflammatory cell/animal models. They lack PsA-specific IL-23 induction and SKG mouse models to conduct collaborative verification of drug pair compatibility; there is no systematic study on the optimal compatibility ratio of drug pairs, dose-effect relationships, and dynamic changes in blood components; there is a lack of metabolic interactions and long-term safety evaluation of liver and kidney after the combination of Chinese and Western drugs [21].

2) Clinical research level: The existing literature is mainly based on physicians' experience summaries and small-sample retrospective observations. There is a lack of large-sample, multi-center, randomized double-blind controlled clinical trials, and the evidence level of evidence-based medicine is low; there is no unified quantitative standard for syndrome differentiation of heat-toxic stasis syndrome, and it is difficult to horizontally compare the efficacy data of different doctors [22].

3) Mechanism mining level: Most of them focus on the observation of single inflammation and immune pathways, and lack of network pharmacology, single cell transcriptome, and metabolomics to jointly analyze the complete molecular regulatory network of drugs regulating PsA [23].

6.2 Future Research Directions

1) Basic experimental research: Construct a standardized PsA animal model, compare the skin lesion scores, joint swelling, bone erosion, and expression of inflammatory factors between single-flavored Polygonum cuspidatum, single-flavored Hedyotis diffusa, and drug pairs in groups to clarify the synergistic drug effects; use molecular docking and network pharmacology to screen the core targets of the drug pairs.

2) Clinical evidence-based research: Design a multi-center

randomized controlled trial, using the disease activity index (DAPSA), skin lesion PASI score, ESR, and CRP as the main efficacy indicators to evaluate the synergistic and detoxification value of the drug pair combined with western medicine; establish a unified quantitative scale for syndrome differentiation of PsA heat, toxicity, and blood stasis.

3) Translational application research: isolate the effective components of the drug pair, conduct component compatibility and efficacy tests, explore the development of traditional Chinese medicine compound preparations and granules, and promote the standardization and industrialization of traditional Chinese medicine for the treatment of PsA.

7. Conclusion

Polygonum cuspidatum-white flower snake tongue herbal medicine closely follows the core pathogenesis of psoriatic arthritis due to the inherent heat and poison, blood stasis blocking the collaterals, and the intertwining of toxins and blood stasis. It follows the core treatment principle of "clearing heat and detoxifying, activating blood circulation and unblocking collaterals" to achieve synchronous treatment of skin and joints, taking into account both the root cause and the root cause. According to the theory of traditional Chinese medicine, Hedyotis diffusa works to clear the blood and treat the root cause of toxins, while Polygonum cuspidatum powder treats the symptoms of meridian stasis. After compatibility, the vicious cycle of poison and blood stasis is cut off. From the analysis of modern pharmacological mechanisms, the active ingredients of the two drugs synergistically inhibit multiple inflammatory pathways, reshape Th17/Treg immune balance, inhibit synovial pannus, regulate uric acid metabolism, multi-dimensionally intervene in all key pathological links of PsA, are safe and suitable for patients in the active stage. The current research on this drug still has shortcomings such as insufficient basic experimental evidence and lack of high-quality clinical research. In the future, its mechanism of action and clinical efficacy can be further clarified with the help of standardized animal models, multi-omics technology, and large-sample randomized controlled trials. Polygonum cuspidatum-Albus leucophylla herbal pair has the advantages of precise efficacy, low cost, and few adverse reactions. It is expected to be included in the standardized diagnosis and treatment plan of PsA integrating traditional Chinese and Western medicine, and has broad prospects for clinical promotion and new drug development.

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