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Research Progress in Traditional Chinese Medicine for the Treatment of Diabetes

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Abstract: Diabetes is a major public health problem around the world. Its prevalence keeps rising. Western medicine can control blood glucose, but it does little to stop complications. Traditional Chinese Medicine (TCM) focuses on syndrome differentiation and treatment. It has clear strengths in managing diabetes and its complications. This paper reviews recent work on TCM treatment of diabetes. It covers etiology, pathogenesis, syndrome differentiation, decoctions, proprietary medicines, single herbs, and external therapies. Research shows that TCM views "yin deficiency with internal heat" as the core problem in diabetes. In practice, doctors often use therapies that tonify qi and nourish yin, clear heat and promote fluid production, or nourish yin and moisten dryness. Classic formulas like Baihu Decoction, Shashen Maidong Decoction, and Huangqi Sijunzi Decoction have shown good results. Proprietary medicines such as Huang Kui Capsules and Gui Fu Di Huang Pills also work well. These treatments ease symptoms, protect the kidneys, and help control glucose and lipid levels. Some work by activating insulin pathways or reducing oxidative stress. External therapies—acupuncture, moxibustion, and herbal plasters—also show value as add-on treatments. However, current work still faces problems. Diagnostic criteria are not consistent, and evidence-based data are scarce. Future studies should carry out high-quality clinical trials and mechanistic research. This will help blend traditional Chinese and Western medicine in a coordinated way.

Keywords: Diabetes; Emaciation-thirst disease; Syndrome Differentiation and Treatment; Traditional Chinese Medicine Therapy; External Treatments in Traditional Chinese Medicine.

1. Introduction

Diabetes is a major public health problem around the world. It poses a serious threat to human health. Its prevention and treatment have long been a focus of medical research. According to the World Health Organization, the prevalence of diabetes among adults aged 18 and above rose from 7% in 1990 to 14% in 2022. Among patients over 30 years of age, 59% have not received standardized blood sugar control treatment. The treatment gap is especially large in low- and middle-income countries.

Diabetes is marked by ongoing high blood sugar. Clinically, it falls into three types: Type 1, Type 2, and gestational diabetes. The disease starts from a lack of insulin or poor insulin action. Genetic and environmental factors work together. They impair the function of pancreatic beta cells, leading to lower insulin secretion. Or they reduce insulin sensitivity in target tissues. Sometimes both problems occur at once. The final result is that the body cannot use or store glucose properly.

In Western medicine, treatment focuses on three goals: controlling blood glucose, lowering blood pressure, and regulating blood lipids. Doctors often prescribe renin-angiotensin-aldosterone system inhibitors, endothelin receptor antagonists, GLP-1 receptor agonists, and SGLT-2 inhibitors. These drugs can lower proteinuria levels and slow the decline of kidney function to some degree. But they cannot completely stop the disease process in diabetic nephropathy [1]. Moreover, long-term use may lead to adverse reactions such as gastrointestinal discomfort, risk of hypoglycemia, and increased burden on the liver and kidneys, suggesting that relying solely on Western medicine has certain limitations.

Against this backdrop, Traditional Chinese Medicine (TCM), with pattern identification and treatment as its core philosophy and emphasizing holistic regulation and individualized therapy, has demonstrated unique advantages in alleviating clinical symptoms, protecting renal function, and delaying the progression of DN, thereby attracting increasing attention from the academic community [2]. In recent years, many studies have looked into how TCM works against diabetes. They have examined its mechanisms and effectiveness from many angles. These studies offer useful evidence for clinical use. This article aims to give a broad review of recent advances in TCM diabetes treatment. It will cover the following areas: etiology and pathogenesis, pattern identification and treatment, herbal therapy (including classic formulas, proprietary medicines, and active ingredients from single herbs), and external therapies. On this basis, the article also points out problems in current research and suggests future directions. The goal is to support further study and clinical application of TCM in diabetes care.

2. Etiology and Pathogenesis

The pathogenesis of diabetes involves the interaction of multiple factors. Modern medicine posits that the root cause lies in insufficient insulin secretion or reduced insulin efficacy, leading to impaired glucose metabolism. The onset of diabetes is a complex metabolic imbalance resulting from the interplay of multiple factors, including genetic predisposition, environmental influences, and immune factors, encompassing multiple levels such as damage to pancreatic β-cells, insulin resistance, hormonal dysregulation, and chronic inflammation [3] .

Traditional Chinese Medicine classifies diabetes under the category of "xiao ke" (thirst and wasting syndrome). Over the centuries, Chinese medicine practitioners have developed a

rich and coherent understanding of the causes of this disease. Their explanations fall into four main areas.

First, constitutional weakness. A person may be born with weak vital energy and poor function of the five zang organs. When the body's defensive qi is insufficient, it cannot resist external pathogens. Pathogenic influences then invade and gradually deplete the yin fluids. This leads to the development of xiao ke.

Second, improper diet. Long-term overconsumption of rich, sweet, greasy, or spicy foods damages the spleen and stomach. These organs lose their ability to transport and transform nutrients. Food stagnates in the stomach and generates internal heat over time. This heat scorches the body fluids and eventually results in xiao ke.

Third, emotional disturbance. Prolonged mental stress or suppressed anger causes liver qi to stagnate. Stagnant qi turns into fire over time. This fire burns the stomach yin, leading to excessive hunger. It depletes the kidney yin, causing frequent urination. It also injures the lung yin, resulting in intense thirst. Together these changes bring about xiao ke.

Fourth, excessive physical or sexual activity. Unregulated sexual activity or overexertion consumes kidney essence. When kidney yin is depleted, empty fire flares up inside. This fire rises to disturb the lungs and stomach. The result is a combination of kidney deficiency, lung dryness, and stomach heat, which eventually triggers diabetes.

Although these four causes differ in their starting points, they all end up in the same place: deficiency of yin fluids and generation of internal dryness and heat. Thus, "yin deficiency with internal dryness and heat" is the core pathogenesis of xiao ke. When yin is deficient, the viscera and organs lack nourishment. When dryness and heat arise, they further consume the yin fluids. The two factors feed into each other and create a vicious cycle. This cycle produces the classic symptoms: excessive thirst, excessive hunger, frequent urination, and weight loss. Clarifying this core pathogenesis lays a solid foundation for the syndrome differentiation and treatment that follow.

3. Differentiation of Syndromes and Treatment

Pattern differentiation is the first step in TCM diagnosis. The doctor collects information through four methods: observation, listening, inquiry, and pulse-taking. This covers the patient's history, symptoms, and physical signs. Through analysis and synthesis, the doctor determines the cause, nature, and location of the disease. The relationship between the pathogen and the body's defensive energy is also assessed. These findings are then summarized into a specific syndrome. Treatment follows from this. Based on the identified syndrome, the doctor establishes therapeutic principles and selects corresponding methods. The "Five-Step Method" of pattern differentiation and treatment comes from the Zang-Xiang theory. It draws on the essence of the "Nineteen Principles of Pathogenesis." This approach builds a new pathway for viscera-based pattern differentiation and offers another model for clinical practice [4].

The yin deficiency with internal heat pattern is common among diabetic nephropathy patients. Typical signs include excessive thirst, dry mouth and tongue, frequent and copious urination, a dull complexion, and weight loss. These point to insufficient yin fluids and excessive internal heat. TCM holds that yin deficiency is the root of the heat imbalance, which then triggers the symptoms. Xiao ke syndrome is divided into three types: upper, middle, and lower. Lung dryness with thirst—where the patient has an overwhelming urge to drink—belongs to the upper type. Stomach heat with hunger—where the patient tends to overeat—falls into the middle type. Kidney deficiency with frequent urination—where the patient loses control over urine—belongs to the lower type [5, 6].

The “Treatise on Bi Syndrome” in the *Su Wen* states that wind, cold, and dampness combine to form bi syndrome. This suggests that when wind pathogens obstruct the collaterals, they often combine with other pathogenic factors to cause disease. In diabetic vascular complications, pathogenic wind can both stagnate qi and blood, leading to stasis, and coalesce with phlegm, heat, depression, and stasis to form “micro-masses,” further obstructing the meridians. This supports the currently proposed “micro-mass” hypothesis for diabetic nephropathy[7, 8].

The Treatise on Blood Disorders points out that blood and qi are inseparable. When stagnant blood builds up inside, qi cannot flow freely. Body fluids cannot ascend to nourish the upper body. This leads to thirst, which is called "blood thirst." Once the stasis is resolved, the thirst goes away. Stagnant blood also blocks the kidney meridians. The kidneys lose nourishment and kidney essence becomes further depleted. This disrupts the normal regulation of ascending clear and descending turbid fluids. Qi transformation is impaired, and body fluid distribution is obstructed. In turn, this promotes the generation of phlegm-dampness and turbidity. The two factors feed into each other. The condition becomes prolonged and difficult to treat [9] .

4. Treatment with Decoctions of Traditional Chinese Medicine

The critical window for diabetes intervention is the early stage, when both qi and yin are deficient. Seizing this stage can stop the disease from getting worse. Since yin deficiency is the root cause, and dual deficiency of qi and yin is the most common pattern [10], the primary clinical treatment strategy is to tonify qi and nourish yin.

Classified by effect, commonly used Chinese herbs fall into 15 categories. The five most frequently used are deficiency-tonifying, heat-clearing, blood-promoting, astringent, and diuretic-dampness draining herbs. Together they account for 86.22% of all prescriptions. In terms of herb properties, cold-natured herbs are most common, followed by cool and warm. In terms of taste, sweet is primary, followed by bitter and pungent [11].

Decoctions are a key treatment method in TCM for diabetes. They can be used alone or together with Western drugs. Extensive clinical experience has been built up over time. Below we highlight three representative formulas. They are explained from three therapeutic angles: clearing heat and generating body fluids, nourishing yin and moistening dryness, and tonifying qi and nourishing yin.

4.1. Bai Hu Tang

TCM views the internal buildup of damp-heat as a key pathological mechanism in diabetes, especially in the early stages. For this reason, clearing heat and draining dampness is often seen as the core of treatment [12].

The *Comprehensive Dictionary of Traditional Chinese Medicine Formulas* lists Baihu Renshen Decoction among the

most frequently used herbs in modern formulas for treating Emaciation-thirst disease (diabetes) [13]. Baihu Decoction comes from Zhang Zhongjing's Treatise on Cold Damage Diseases. It contains four ingredients: gypsum, anemarrhena, glutinous rice, and fried licorice. The formula is mainly used for thirst and dry throat caused by dry heat that has damaged body fluids.

In this formula, gypsum and anemarrhena are cold in nature. They clear excess heat from the lung and stomach while nourishing yin and moistening dryness. Glutinous rice and fried licorice are sweet and mild. They moderate the formula's properties—on one hand, they counteract the bitter and cold nature of the other ingredients; on the other hand, they protect the spleen and stomach to support the generation of body fluids. Together, the four herbs clear heat, generate fluids, relieve restlessness, and quench thirst. This eases symptoms such as facial flushing, hot flashes, excessive sweating, and intense thirst in diabetic patients.

One important point to note: this formula is not suitable for patients with cold-syndrome signs. These include fever without sweating, absence of thirst, aversion to cold, and loose stools.

Modern pharmacological studies show that Bai Hu Tang activates the IRS-1/PI3K/Akt signaling pathway. It also regulates glucose and lipid metabolism and helps with vascular remodeling [14] (as shown in Table 1). Clinical studies have confirmed that Baihu Jia Renshen Decoction works well for type 2 diabetes patients with the syndrome of qi and yin deficiency. It is often used as the main formula in such cases.

Table 1. Comparison of IRS-1, PI3K, and Akt mRNA expression levels between the two groups

		IRS-1		PI3K		Akt	
Group	**n**	**Before Treatment**	**After Treatment**	**Before Treatment**	**After Treatment**	**Before Treatment**	**After Treatment**
Control group	64	0.44 ± 0.08	0.65 ± 0.22[a]	0.39 ± 0.07	0.55 ± 0.18[a]	0.27 ± 0.06	0.66 ± 0.10[a]
Observation group	68	0.46 ± 0.09	0.98 ± 0.25[a]	0.40 ± 0.09	0.78 ± 0.15[a]	0.28 ± 0.02	0.84 ± 0.08[a]

Note: A indicates comparsion with before treatment within the same group, [a]P<0.05.

4.2. Sasheng Maidong Decoction

Diabetic patients often present primarily with yin deficiency and dry heat; therefore, nourishing yin and moistening dryness is one of the key therapeutic approaches for treating diabetes. Shashen Maidong Decoction is effective in clearing and nourishing the lung and stomach, generating body fluids, and moistening dryness. In the formula, North Ginseng and Ophiopogon nourish yin and generate body fluids; Polygonatum and Trichosanthes root moisten dryness and quench thirst; Polygonatum and Chinese yam tonify qi and strengthen the spleen; Angelica sinensis nourishes and invigorates blood; and Cuscuta seed warms and tonifies kidney yang. While nourishing yin and moistening dryness, the formula also addresses spleen tonification, blood activation, dampness drainage, and yang warming, thereby achieving the harmonious regulation of the lung, spleen, and kidney[15]. Other clinical observations also support its use. Wang Zhenqin combined this formula with blood sugar-lowering drugs. He treated diabetic patients with lung infections and obtained positive outcomes[16].

Research progress. Modern pharmacological studies are limited. However, some evidence shows that the active components in Sha Shen Mai Dong Tang may help protect pancreatic islet cells. They may also reduce oxidative stress and improve insulin sensitivity. These effects are similar to those found in other yin-nourishing formulas. More studies are still needed to clarify the mechanisms.

4.3. Astragalus and Four Gentlemen Decoction

Huang Qi Si Jun Zi Tang is commonly used for diabetes patients with both qi and yin deficiency. This pattern often appears when the disease has lasted for some time [17]. Spleen deficiency with retained dampness is also a key feature. The formula is based on Si Jun Zi Tang, a classic qi-tonifying prescription. It contains herbs such as Astragalus, Codonopsis, Poria, Atractylodes, Rehmannia, Dendrobium, and Coptis. Astragalus is added to strengthen the qi-tonifying effect. Coptis is included to clear heat and dry dampness [18].

Each herb plays a specific role. Coptis is bitter and cold. It clears heat, drains dampness, and removes toxins. Ligustrum lucidum is sweet, bitter, and slightly cool. It nourishes the liver and kidneys while clearing deficient heat. Atractylodes is bitter and warm. It dries dampness, promotes urination, and strengthens the spleen. Rehmannia is sweet and cold. It nourishes blood and replenishes yin. Dendrobium is sweet, bland, and slightly salty. It benefits the stomach, generates fluids, and nourishes yin to clear heat. Together, these herbs clear heat, generate fluids, tonify qi, and nourish yin. The combination works in a coordinated way.

Table 2. Comparison of Blood Glucose Control Indicators

Group	**Cases**	**FPG (mmol/L)**	**2hPG (mmol/L)**	**HbA1c (%)**
Control group	45	5.6 ± 0.9	8.3 ± 1.2	6.5 ± 0.7
Observation group	45	4.8 ± 0.8	7.1 ± 1.1	5.8 ± 0.6
t value		3.42	4.05	4.33
P value		<0.01	<0.01	<0.01

Regarding research progress, this formula is often used for gestational diabetes. Patients with this condition frequently show signs of qi and yin deficiency. They may also have spleen deficiency with dampness. Clinical studies have shown that Huang Qi Si Jun Zi Tang works well for these patients. When used together with insulin aspart and metformin, it produces a stronger blood sugar-lowering effect [19] (as shown in Table 2). Modern pharmacological studies offer some explanations. Astragalus can improve insulin receptor sensitivity. It also activates insulin signaling pathways to help the body use glucose better. Atractylodes and Poria strengthen the spleen and resolve dampness. They promote metabolism and may improve blood sugar control. These actions help reduce insulin resistance. They also make

insulin's glucose-lowering effect more stable [20]. Most studies on this formula focus on gestational diabetes. Its use for other types of diabetes has not been fully explored. Long-term efficacy also remains unclear. More research is needed to confirm its benefits across different patient groups.

4.4. Summary of Research on Decoction Therapy

A review of the three formulas above shows that Chinese herbal decoctions treat diabetes mainly through three therapeutic approaches.

The first approach is clearing heat and generating body fluids. Baihu Decoction is the representative formula. It is suitable for patients with excessive internal dryness-heat and damaged body fluids.The second approach is nourishing yin and moistening dryness. Shashen Maidong Decoction is the representative formula. It is suitable for patients with yin deficiency and dry heat, as well as damage to lung and stomach fluids.The third approach is tonifying qi and nourishing yin. Huangqi Sijunzi Decoction is the representative formula. It is suitable for patients with both qi and yin deficiency and spleen deficiency with retained dampness.These three approaches differ in their focus. Yet all of them address the core pathogenesis of "yin deficiency with internal heat." This reflects the TCM principle of "treating the root cause of the disease."

Current studies have provided initial validation of these formulas' clinical efficacy. The mechanisms of some formulas have also been partly clarified through modern pharmacological research. For example, Bai Hu Tang activates the IRS-1/PI3K/Akt pathway. Huang Qi regulates the insulin signaling pathway.

However, current research still has common problems. Sample sizes are small. Study designs are not standardized. Mechanistic studies lack depth. In the future, there is an urgent need to conduct more rigorously designed, large-scale randomized controlled trials and to utilize multi-omics technologies to deeply analyze the target sites and molecular mechanisms of these formulas, thereby enhancing the level of evidence-based medicine for Chinese herbal decoctions in the treatment of diabetes.

5. Treatment with Proprietary Chinese Medicines

5.1. Huang Kui Capsules

The active ingredient in Huang Kui Capsules is the traditional medicinal plant Hibiscus esculentus, which possesses properties such as promoting diuresis and reducing edema, clearing heat and detoxifying, and invigorating blood circulation and unblocking meridians. It is cold in nature and sweet in taste. This formulation exerts a protective effect on the renal tubules by scavenging oxygen free radicals and inflammatory factors, thereby alleviating glomerular immune inflammation and oxidative stress-induced damage, and relieving tubulointerstitial lesions; simultaneously, it dilates blood vessels, reduces spasm, and improves local circulation. As shown in Table 3 and Table 4, the average pre-treatment serum levels of TNF-α, MDA, sOX40L, and 8-OHdG were all lower than the post-treatment levels. The study group's levels of these indicators were also lower than those of the untreated group, indicating that Hibiscus Capsules significantly reduce oxidative stress and inflammatory damage in patients with diabetic nephropathy. Compared with untreated levels, Huang Kui Capsules effectively reduce the degree of oxidative stress and inflammatory damage in patients with diabetic nephropathy[21]. A combination therapy of Huang Kui Capsules and finerenone may also be used to treat diabetic patients. Test results indicate that this combination regimen is more effective than the untreated group in improving renal function and reducing inflammatory markers [22].

Table 3. Comparison of serological indicators between the two groups

		TNF-α (μg/L)		Malondialdehyde (nmol/L)	
Group	**Cases**	**Before treatment**	**After treatment**	**Before treatment**	**After treatment**
Study group	43	64.25 ± 5.14	21.39 ± 4.08[a]	15.75 ± 3.36	6.33 ± 1.48[a]
Control group	43	65.16 ± 7.38	37.42 ± 5.21[a]	16.01 ± 4.14	8.21 ± 1.76[a]
t value		0.644	15.885	0.32	5.361
P value		0.509	<0.001	0.75	<0.001

Note: Compared with before treatment within the same group, a indicates [a]P <0.05.

Table 4. Comparison of serological indicators between the two groups

		Soluble OX40L (ng/mL)		8-Hydroxydeoxyguanosine (ng/mL)	
Group	**Cases**	**Before treatment**	**After treatment**	**Before treatment**	**After treatment**
Study group	43	32.58 ± 4.06	18.61 ± 3.73[a]	249.82 ± 31.63	74.06 ± 9.55[a]
Control group	43	33.13 ± 5.79	24.95 ± 4.24[a]	252.17 ± 29.41	93.38 ± 8.17[a]
t value		0.51	7.362	0.357	10.08
P value		0.611	<0.001	0.722	<0.001

Note: Compared with before treatment within the same group, a indicates [a]P <0.05.

5.2. Gui Fu Di Huang Wan

Among the ingredients of Gui Fu Di Huang Wan, processed Cornus officinalis and prepared Rehmannia glutinosa nourish the liver and kidneys; Poria cocos and Dioscorea opposita strengthen the spleen and drain dampness; Cinnamomum cassia and processed Aconitum carmichaeli are primarily used to warm and tonify kidney yang; Paeonia suffruticosa cools the blood and clears heat; and Alisma orientale promotes diuresis and drains dampness. The synergistic action of these multiple herbs warms Yang and enhances spleen function, aligning with the pathological mechanism of Yang deficiency and dampness obstruction in stage III diabetic nephropathy. This approach can alleviate symptoms, improve renal function and RAS indicators, suppress inflammation, and demonstrates good safety[23]. Survey data also indicate that this medication significantly alleviates

symptoms such as edema, fatigue, soreness in the lower back and knees, tinnitus, dizziness, and aversion to cold with cold extremities, thereby enhancing overall therapeutic efficacy [24]. For patients with type 2 diabetes complicated by hyperuricemia, the experimental results are shown in Table 5. Compared with pre-treatment levels, HbA1c (%) gradually decreased in the observation group, while no significant trend was observed in the control group; There were no significant changes in LDL, HDL, CRP, ALT, or Cr levels in either the control or observation groups; regarding the effect on urinary protein, the conversion rate to negative in the observation group (86.7%) was higher than that in the control group (38.5%). This indicates that, while treating the underlying disease, the addition of Gui Fu Di Huang Wan can significantly lower uric acid levels and simultaneously alleviate patients' clinical symptoms[25].

Table 5. Comparison of changes in biochemical indicators before and after treatment between the two groups.

Group	n	Time	UA (μmol/L)	LDL (mmol/L)	HDL (mmol/L)	HbA1c (%)	ALT (U/L)	Cr (μmol/L)	Up (Positive)
Control group	53	**Before treatment**	487.13 ± 109.26	3.29 ± 1.12	1.29 ± 0.33	7.50 ± 1.01	32.75 ± 5.42	109.56 ± 10.21	13
		1 month	496.78 ± 97.58	3.08 ± 0.89	1.37±0.46	5.90 ± 0.48	35.46 ± 20.12	99.76 ± 20.13	11
		2 month	469.23 ± 57.99	3.15 ± 0.64	1.32 ± 0.17	7.34 ± 1.64	38.63 ± 12.25	94.23 ± 28.43	8
		3 month	476.23 ± 122.58	2.96 ± 1.02	1.29 ± 0.48	6.30 ± 2.15	45.36 ± 10.28	101.36 ± 37.81	8
Observation group	53	**Before treatment**	495.45 ± 128.55	3.05 ± 0.53	1.49 ± 0.42	8.91 ± 2.15	38.52 ± 21.02	93.24 ± 47.35	15
		1 month	403.77 ± 99.12[1)]	2.84 ± 0.85	1.35 ± 0.75	7.26 ± 2.69	39.18 ± 15.46	97.12 ± 17.46	10
		2 month	359.98 ± 133.65[2)]	2.75± 0.92	1.42 ± 0.85	6.13 ± 1.25	34.32 ± 17.89	89.75 ± 36.24	4
		3 month	309.45 ± 102.63[2)]	2.69 ± 0.79	1.39 ± 0.79	5.82 ± 2.33[1)]	39.68 ± 7.32	92.76 ± 18.74	2

Note: Compared with before treatment, [1)]$P<0.05$, [2)]$P<0.01$.

5.3. Mudan Granules

In the Mu Dan Granules formulation,the activity of aldose reductase under hyperglycemic conditions is significantly inhibited by Astragalus,Sappanwood, and Salvia miltiorrhiza, resulting in reduced sorbitol accumulation andlower levels of glycated proteins; Meanwhile, chuanxiongzine, a compound found in Chuanxiong, promotes blood circulation and dispels blood stasis, enhancing the synergistic effects of Safflower, Corydalis, Chuanxiong, and Salvia in formulations targeting peripheral microcirculation. It significantly promotes peripheral blood flow, establishes collateral circulation, accelerates blood flow velocity, and thereby alleviates limb discomfort. Furthermore, Mudan Granules can also reduce the levels of advanced glycation end products (AGEs) in the sciatic nerve, thereby Na^+ -K^+- ATP enhancing enzyme activity, improving nerve conduction, and enhancing overall neural function within the nervous system; simultaneously, increased neurotrophic factors optimize microcirculation and strengthen blood supply to the nerve endothelium[26].

6. Treatment with Single-Herb Formulations

Li Shizhen's *Compendium of Materia Medica* describes Astragalus (Huangqi) as "the foremost among all qi-tonifying herbs," noting that it is "sweet and purely yang, capable of tonifying all deficiencies." Astragalus belongs to the category of Chinese herbs that tonify deficiencies and support the body's vital energy. It has a sweet taste and warm nature, capable of improving various symptoms of physical weakness, and possesses the effects of tonifying qi and fortifying the exterior, detoxifying and draining pus, and promoting fluid production to quench thirst. Modern research has found that its primary active components, such as astragalosides, astragaloside A, and morin, possess significant nephroprotective effects and can effectively inhibit the pathological progression of diabetic nephropathy [27]. Its extract, astragaloside A, possesses multiple activities including anti-inflammatory, anti-fibrotic, anti-apoptotic, and immunomodulatory effects.

The *Yifang Leiju: Chapter on Diabetes* states that renal wasting (shen xiao) results from prolonged diabetes affecting the kidneys, causing the essence of food and drink to be expelled along with pathogenic dampness. Treatment should clear pathogens and tonify the kidneys to preserve essence. The text suggests that Cordyceps sinensis can help with this. It replenishes essence and tonifies the kidneys.

Cordyceps sinensis works in several ways. It inhibits α-glucosidase. It boosts pyruvate kinase activity. It promotes the growth of good gut bacteria. It increases liver glycogen synthesis. It also raises adiponectin levels. The herb lowers blood glucose by upregulating Akt protein expression. It also activates proteasomes and GLUT4 activity [28].

The main compounds in Cordyceps sinensis are arachidonic acid, linalyl acetate, β-sitosterol, and cholesterol. Among these, arachidonic acid and β-sitosterol are the key players. Arachidonic acid improves vascular elasticity. It esterifies cholesterol. It also lowers blood viscosity. These actions help slow down diabetic nephropathy. β-sitosterol boosts renal function in several ways. It regulates endothelial function. It lowers blood cholesterol. It also enhances antioxidant capacity[29].

7. External Treatments in Traditional Chinese Medicine

External therapies are a key part of TCM. They come from the meridian and acupoint theory. The basic idea is to stimulate the body surface. This helps regulate organ functions and promote qi and blood flow.

In diabetes care, external therapies supplement internal treatments. They cannot replace standard blood sugar control. But they do have value. They help control blood glucose. They ease symptoms. They also improve complications.

Three external therapies are common in clinical practice:

acupuncture, moxibustion, and herbal plaster. Each is described below.

7.1. Acupuncture

Acupuncture is often used alongside TCM or Western medicine for diabetes. Common techniques include body acupuncture, ear acupuncture, electroacupuncture, acupoint implantation, and moxibustion. These methods stimulate specific acupoints. They regulate metabolism. They reduce insulin resistance. But they must be done by a licensed practitioner. They are only an add-on therapy.

Body acupuncture is the most common type. It selects metabolism-related acupoints to regulate internal organs. Commonly used points are Spleen Shu (BL21), Zusanli (ST36), Sanyinjiao (SP6), Pancreas Shu (BL22), and Lung Shu (BL13). Zusanli mainly regulates the spleen and stomach. Pancreas Shu corresponds to the pancreas.

When doctors combine a yin-nourishing, qi-tonifying formula with acupuncture for qi and yin deficiency diabetes, choosing Shenshu (BL23) helps excrete phenylsulfonylpeptide. This lowers red blood cells, white blood cells, and protein in urine. It also lowers blood pressure, boosts urine output, and reduces edema. These effects improve kidney function and treatment results (see Table 6) [30].

Acupuncture plus oral mosapride for diabetic gastroparesis raises plasma gastrin and substance P levels. This boosts gastric motility. It speeds up stomach emptying through nerve pathways. This helps regulate stomach function and speeds recovery. The study also found that electroacupuncture at Zusanli (ST36) improves gastric motility. Serum motilin and gastrin rise together. This matches the increase in gastric activity [31].

Table 6. Comparison of blood glucose indicators between the two groups

		FPG (mmol/L)		HbA1c (%)	
Group	**n**	**Before Treatment**	**After 12 Weeks**	**Before Treatment**	**After 12 Weeks**
Control group	53	9.83 ± 1.02	6.18 ± 0.81[a]	9.66 ± 0.31	6.18 ± 0.23[a]
Observation group	53	9.78 ± 1.05	7.91 ± 0.90[a]	9.63 ± 0.32	7.54 ± 0.41[a]
t value		0.249	10.402	0.49	21.061

Note: [a]P <0.05 compared with the same group before treatment.

7.2. Moxibustion Therapy

Moxibustion plays a supporting role in diabetes care. Patients may get some help with blood sugar control. The therapy burns moxa wool or moxa cones. Heat is applied to acupoints on the body. The warmth and medicinal effects travel along the meridians. This warms and promotes qi and blood flow. It also boosts the body's defenses and clears pathogens [32].

In the care of diabetic foot, moxibustion applied to wounds can improve local blood circulation, reduce swelling and pain, promote blood circulation and dispel blood stasis, dilate blood vessels, stimulate the body's self-regulatory functions, and accelerate ulcer healing. Studies have shown that moxibustion with moxa sticks can enhance local tissue metabolism, promote the necrosis and shedding of non-viable tissue, accelerate the repair of healthy tissue, and simultaneously reduce pus secretion[33]. Moxibustion intervention can also reduce urinary frequency and blood glucose levels in patients with early-stage diabetic nephropathy of the spleen-kidney yang deficiency type, alleviating TCM syndromes such as frequent urination, increased nocturia, cold pain in the lower back, edema, fatigue and weakness, loose stools, poor appetite, and insomnia, while improving renal function and enhancing quality of life.

7.3. Herbal Plaster Therapy

Herbal plaster therapy utilizes the dual effects of acupoint stimulation and transdermal drug penetration to harmonize qi and blood and assist in blood sugar control. It is another important external treatment method for diabetes, but it must be conducted in conjunction with dietary management, exercise intervention, and standardized medication use, and the prescription must be tailored to the individual. Commonly used herbs include Coptis, Astragalus, and Lycium bark. In clinical practice, appropriate formulas and acupoints are selected based on pattern differentiation: those with yin deficiency and internal heat should use formulas that clear heat and nourish yin; those with qi deficiency and spleen weakness should use formulas that tonify qi and strengthen the spleen; and those with blood stasis presenting as numbness and prickling pain in the limbs should use formulas that activate blood circulation and unblock meridians. Among common acupoints, Yongquan on the sole directs fire downward and eases dry mouth and tongue. Shenque at the navel regulates the spleen and stomach and boosts metabolism [34].

TCM plaster therapy works well for diabetic foot ulcers. It increases contact between the drug and the wound. Active ingredients pass through the skin. This raises local drug levels. When used with negative pressure wound therapy (NPWT), both methods work together. They improve local blood supply. They speed up granulation tissue growth. This cuts healing time and shortens hospital stays [35].

Also, combining TCM acupoint plaster with Tangmaikang and Western drugs boosts outcomes for diabetic kidney disease. It improves blood glucose control. It lowers proteinuria. It also protects kidney function.

8. Conclusion

Diabetes rates remain high worldwide. Once complications set in, Western medicine often cannot stop them from getting worse.

TCM takes a different path. It focuses on "differential diagnosis and treatment." It sees "yin deficiency with dry heat" as the core problem in diabetes. Based on theories like the "Three Consumption Syndrome," TCM has built a complete system. This system combines internal and external treatments.

For internal use, doctors prescribe decoctions like Baihu Decoction, patent medicines like Huang Kui Capsules, and single herbs like Astragalus. For external use, they turn to acupuncture, moxibustion, and herbal plasters. These approaches do more than just relieve symptoms. They also protect the kidneys.

But TCM still faces big hurdles. Syndrome differentiation

is hard to measure. Evidence-based data are scarce. These are major roadblocks for the field.

Future research should tackle these problems. Scientists need to run standardized studies. They should use modern tools to explore how TCM works. They should also push for better integration of traditional and Western medicine. This will help TCM reach its full potential in preventing and treating diabetes.

References

[1] Sawaf, H., Thomas, G., Taliercio, J. J., Nakhoul, G., Vachharajani, T. J., & Mehdi, A. (2022). Therapeutic advances in diabetic nephropathy. *Journal of Clinical Medicine*, *11*(2), 378.

[2] Zhang, T., & Liu, Y. Z. (2024). Research progress on traditional Chinese medicine treatment of diabetic nephropathy. *Clinical Medicine Progress*, *14*(9), 496–502.

[3] Gao, Y. Y., Cao, H. X., Luo, W. W., & Chen, G. Q. (2022). Research progress on the etiology and pathogenesis of type 2 diabetes mellitus in traditional Chinese medicine. *Clinical Research of Traditional Chinese Medicine*, *14*(21), 73–76. https://doi.org/10.3969/j.issn.1674-7860.2022.21.024.

[4] Zhang, F. M., & Gao, S. H. (2025). Application of the "five-step method" of syndrome differentiation and treatment in the management of diabetes. *Chinese General Practitioner*, *41*(7), 45–47.

[5] Chen, C. (2025). Unveiling the wisdom of traditional Chinese medicine: How to treat diabetic nephropathy? *Health Life*, (2), 40–41.

[6] Wang, H. (2022). Traditional Chinese medicine diagnosis and treatment of diabetes. *Family Medicine*, (8), 54.

[7] Mu, Y., & Zhao, J. X. (2025). From "microscopic abscesses" to "treating with wind theory": The application of wind-relieving drugs in diabetic vascular complications. *Global Traditional Chinese Medicine*, *18*(4), 795–798.

[8] Huang, W. J., & Zhao, J. X. (2025). Differential diagnosis and treatment of diabetes and its microvascular complications based on the "new three-removal theory". *Journal of Basic Chinese Medicine*, *31*(2), 326–328. https://doi.org/10. 19945/j. cnki. issn.1006-3250.2025.02.012.

[9] Li, W. Y. (2025). Research progress on traditional Chinese medicine based on syndrome differentiation in the treatment of diabetic nephropathy. *Chinese Medicine Modern Distance Education of China*, *23*(3), 72–75.

[10] Ni, Q. (2000). Pathogenesis based on deficiency of both qi and yin treatment should bear the brunt invigorating qi and nourishing yin——Professor Lin Lan's experience in treatment of diabetes nephropathy. *Liaoning Journal of Traditional Chinese Medicine*, (4), 145–146. https://doi.org/10. 13192/j. ljtcm. 2000.04.4.niq.001.

[11] Su, F. L., Liu, C. N., Yao, Y., Feng, S. Y., Yan, X., & Qiu, Z. W. (2025). Analysis of medication rules of Chinese patent medicines for treating diabetes based on data mining in the three catalogues. *Frontiers in Pharmaceutical Sciences*, *29*(4), 642–649.

[12] Zhang, F. G. (2025). Skillfully using traditional Chinese medicine decoctions to treat diabetes. *Family Life Guide*, *41*(1), 156–157.

[13] Ye, M. Y., Ding, G., Xiao, H., Huang, Y. J., & Li, C. (2020). Analysis of the compatibility of prescriptions and medications for treating consumptive thirst disease in different periods. *Guangming Journal of Chinese Medicine*, *35*(24), 3841–3845.

[14] Li, Y. Y., Luo, Q., Wen, J. X., & Ke, Y. J. (2024). The clinical efficacy of Baihu Decoction combined with traditional Chinese medicine paraffin therapy in the treatment of patients with type 2 diabetes and its impact on the IRS-1/PI3K/Akt signaling pathway. *Journal of Sichuan of Traditional Chinese Medicine*, *42*(6), 99–102.

[15] Qi, S. Q. (1995). 186 cases of diabetes treated with Sha Shen Mai Dong Decoction. *Shaanxi Journal of Traditional Chinese Medicine*, (11), 482.

[16] Wang, Z. Q. (2016). Analysis of the therapeutic effect of Sha Shen Mai Dong Decoction combined with hypoglycemic drugs in the treatment of diabetes complicated with pulmonary infection. *Guide of China Medicine*, *14*(21), 193–194. https://doi. org/10.15912/j.cnki.gocm.2016.21.164.

[17] Jin, C. Y., Wu, F. F., & He, W. J. (2025). Modified four gentlemen decoction as an adjuvant treatment for 54 cases of gestational diabetes. *Chinese Journal of Traditional Medical Science and Technology*, *32*(3), 559–561.

[18] Liang, X. C. (2019). ZHU Chen-yu's experience in treating diabetic gastroparesis. *Beijing Journal of Traditional Chinese Medicine*, *38*(9), 876–878. https://doi.org/10.16025/j.1674-1307.2019.09.008.

[19] Zhang, S. S., Zhang, H. L., Yuan, Y. H., & Guan, Q. (2022). The effect of Huangqi Sijunzi Decoction combined with insulin on serum biochemical indexes and pregnancy outcomes of patients with gestational diabetes. *New Chinese Medicine*, *54*(7), 128–131. https://doi.org/10.13457/j. cnki.jncm. 2022. 07.029.

[20] Hao, Y. L., Xu, J. H., Jiang, B., & Zhou, Y. (2025). Clinical study on gastrointestinal adverse reactions in type 2 diabetes patients treated with Sijunzi Decoction combined with Tongxie Yaofang after glucagon-like peptide-1 receptor agonist week preparation treatment. *Journal of Changchun University of Chinese Medicine*, *41*(9), 1029–1033. https://doi.org/ 10. 13463/ j. cnki. cczyy.2025.09.019.

[21] Li, Y. Y., & Li, H. (2025). The therapeutic effect of Huangkui capsule combined with linagliptin on patients with diabetic nephropathy.*Chronic Pathology Journal*, *26*(6), 898–901. https://doi.org/10.16440/J.CNKI.1674-8166.2025.06.26.

[22] Wang, F., Peng, J., Tan, F., Wu, Y. X., & Liu, D. H. (2025). Clinical study on the treatment of diabetic nephropathy with Huangkui capsules combined with finerenone. *Journal of Practical Traditional Chinese Medicine*, *41*(2), 361–363.

[23] Lin, Z., Gu, L. W., Ji, L. F., Du, J. T., Li, Y., & Ouyang, S. D. (2024). Clinical study on Guifu Dihuang Pills combined with irbesartan in the treatment of diabetic nephropathy.*Drugs & Clinic*, *39*(3), 690–694.

[24] Xie, S., Pan, J., & Lv, N. (2025). Efficacy of Guifu Dihuang pills combined with finerenone in treatment of diabetic nephropathy with spleen-kidney yang deficiency syndrome. *Chinese Journal of Clinical Rational Drug Use*, *18*(19), 10–13. https://doi.org/10.15887/j.cnki.13-1389/r.2025.19.003.

[25] Wang, Q. X., Fang, C. X., Guo, J. J., Li, W. Z., & Nan, W. Q. (2021). Study on the effect of Guifu Dihuang pill on patients with type 2 diabetes complicated with hyperuricemia. *Renowned Doctor*, (3), 167–168. https://doi.org/ 10.20255/ j.cnki. issn1674-9561.2021.03.065.

[26] Lin, X. Y. (2025). Clinical observation on the treatment of diabetic peripheral neuropathy with Mogdan granules combined with acupuncture. *Journal of Practical Traditional Chinese Medicine*, *41*(1), 32–34.

[27] Wan, S. M., & Zhao, Y. (2025). Research progress on astragalus and its medicinal combinations in the prevention and treatment of diabetic nephropathy. *Journal of Practical Traditional Chinese Medicine*, *41*(10), 2095–2099.

[28] Ma, J. Y., Yang, X. H., Peng, M., & Liu, C. Y. (2024). Research progress on the pharmacological mechanism of cordyceps in

treating diabetic nephropathy. *Journal of Liaoning University of Traditional Chinese Medicine*, *26*(6), 151–156. https://doi.org/10.13194/j.issn.1673-842x.2024.06.030.

[29] Xing, L., Xing, W. W., & Zhang, S. H. (2022). Study on the mechanism of cordyceps sinensis in treating diabetic nephropathy based on network pharmacology. *Chinese Journal of Convalescent Medicine*, *31*(4), 358–363. https://doi.org/ 10.13517/j.cnki.ccm.2022.04.005.

[30] Li, S. Y. (2022). Application of the yin-nourishing and qi-strengthening formula combined with acupuncture therapy in the treatment of diabetic nephropathy with qi and yin deficiency. *Inner Mongolia Medical Journal*, *54*(3), 311–313. https://doi.org/10.16096/J.cnki.nmgyxzz.2022.54.03.021.

[31] Zhao, W. J., & Hou, X. (2020). Clinical observation on the treatment of diabetic gastroparesis with acupuncture therapy combined with mosapride oral administration. *Journal of Traditional Chinese Medicine Clinical Research*, *12*(13), 33–35.

[32] Liu, A. Z. (2014). Application of acupuncture therapy nursing intervention in diabetic foot. *Yunnan Journal of Traditional Chinese Medicine and Materia Medica*, *35*(8), 86–87. https://doi.org/10.16254/j.cnki.53-1120/r.2014.08.032.

[33] Li, M. M. (2020). *Observation on the nursing effect of moxibustion on the frequent urination symptoms of early diabetic kidney disease with deficiency of spleen and kidney yang*. Shandong University of Traditional Chinese Medicine. https://doi.org/10.27282/d.cnki.gsdzu.2020.000414.

[34] He, J. R., & Li, J. (2025). The intervention effect of VSD combined with traditional Chinese medicine application on diabetic foot ulcers and its impact on wound healing. *Xinjiang Journal of Traditional Chinese Medicine*, *43*(2), 90–93.

[35] Wang, J. Y., Zhang, J., & Yu, H. (2024). Observation on the therapeutic effect of traditional Chinese medicine acupoint application in the treatment of diabetic nephropathy. *Chinese Journal of Traditional Medical Science and Technology*, *31*(6), 1072–1074.