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Effects of Modified Shenqi Dihuang Decoction Combined with Calcium Dobesilate on TCM Syndrome Scores in Patients with Diabetic Nephropathy

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Abstract: *Objective*: To evaluate the therapeutic effect of Shenqi Dihuang Decoction combined with calcium dobesilate on patients with diabetic nephropathy (DKD). *Methods*: 90 patients with DKD who visited the hospital from March 2024 to March 2025 were selected as samples and randomly divided into two groups. Group A was treated with Shenqi Dihuang Decoction combined with calcium dobesilate, while Group B was treated with calcium dobesilate alone. The efficacy, syndrome scores, blood glucose levels, and renal function indicators were compared between the two groups. *Results*: The efficacy of DKD treatment in Group A was higher than that in Group B ($P < 0.05$). The syndrome scores in Group A were lower than those in Group B ($P < 0.05$). The 2-hour postprandial blood glucose (PBG), fasting blood glucose (FBG), and glycated hemoglobin (HbA1c) levels in Group A were lower than those in Group B ($P < 0.05$). The serum creatinine (SCr), urinary microalbumin, urinary albumin excretion rate (UAER), and β2-microglobulin (β2-MG) levels in Group A were also lower than those in Group B ($P < 0.05$). *Conclusion*: The treatment of DKD with Shenqi Dihuang Decoction combined with calcium dobesilate can stabilize blood glucose levels, improve renal function, and reduce syndrome scores, which is highly effective and feasible.

Keywords: Diabetic nephropathy; Calcium dobesilate; Shenqi Dihuang Decoction; Syndrome score

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1. Introduction

DKD has a high incidence rate among diabetic complications. Under the stimulation of glucose metabolism disorders, patients experience abnormal expression of cytokines in their bodies, leading to abnormal accumulation of glomerular mesangial matrix and thickening of the capillary basement membrane in the kidneys. Over time, the glomerular filtration membrane is damaged, and the glomeruli gradually become sclerosed. Early diagnosis and treatment of DKD are essential to prevent further damage to renal function, which can lead to chronic renal failure

and even threaten the lives of patients with DKD. Initially, patients with DKD may experience a mild increase in protein levels in their urine, which gradually progresses to proteinuria as the disease advances [1]. Therefore, the focus of DKD treatment is to reverse microalbuminuria. Western medicine, such as calcium dobesilate, can improve arterial blood flow and reduce the burden on the kidneys, but the effect of monotherapy on improving renal function is limited. In traditional Chinese medicine, DKD is categorized as "kidney consumption" or "kidney tuberculosis," and it is believed to be related to qi and blood deficiency and yin and fluid depletion. Treatment typically involves formulas that nourish both the spleen and kidneys, replenish Yin, and boost Qi, such as Shenqi Dihuang Decoction. Based on this, this article explores the efficacy of Shenqi Dihuang Decoction combined with calcium dobesilate using a sample of 90 patients with DKD who visited the hospital from March 2024 to March 2025.

2. Materials and methods

2.1. Materials

90 patients with DKD who visited the hospital from March 2024 to March 2025 were selected as samples and randomly divided into groups A and B using a lottery method. The baseline data of DKD in Group A were compared with those in Group B, showing no significant differences ($P > 0.05$). See Table 1.

Table 1. Analysis of the baseline characteristics of the patients with DKD

Group	*n*	Gender (%)		Age (years)		Disease duration (years)	
		Male	Female	Range	Mean ± SD	Range	Mean ± SD
Group A	45	20 (44.44%)	25 (55.56%)	39–63	45.44 ± 1.89	1–3	1.85 ± 0.42
Group B	45	21 (46.67%)	24 (53.33%)	38–62	45.41 ± 1.91	1–4	1.89 ± 0.39
χ^2/t	-	0.0448	0.0749	0.4682			
P-value	-	0.8324	0.9405	0.6408			

2.2. Inclusion and exclusion criteria

Inclusion criteria: (1) Meet the criteria for diabetic kidney disease (DKD) as defined in the "Expert Consensus on Clinical Diagnosis of Diabetic Kidney Disease in Chinese Adults" [2] and the "2011 Guidelines for the Prevention and Treatment of Diabetic Nephropathy in Traditional Chinese Medicine" [3]; (2) Signed informed consent; (3) Presence of symptoms such as turbid urine, shortness of breath, fatigue, etc. Exclusion criteria: (1) Congenital renal dysfunction; (2) Malignant tumors; (3) Other hyperglycemia-related complications.

2.3. Treatment methods

Group A received combined treatment with Shenqi Dihuang Decoction. The prescription is as follows: 30 g each of Dangshen (*Codonopsis pilosula*), Huangqi (*Astragalus membranaceus*), and Danshen (*Salvia miltiorrhiza*); 20 g of Shudi (*Rehmannia glutinosa*); 15 g each of Chuanxiong (*Ligusticum chuanxiong*), Danggui (*Angelica sinensis*), Shengshanyao (*Dioscorea opposita*), Shanyu (*Cornus officinalis*), and Zexie (*Alismatis rhizoma*); 10 g each of Fuling (*Poria cocos*) and Danpi (*Paeonia suffruticosa*). Dialectical prescriptions are as follows: For those with dampness and phlegm, add Cangzhu (*Atractylodes lancea*) and Huoxiang (*Pogostemon cablin*); for those with yin deficiency, add Mohanlian (*Eclipta prostrata*) and Nuzhenzi (*Ligustrum lucidum*); for those with yang

deficiency, add Yinyanghuo (*Epimedium brevicornum*) and Zhifuzi (*Aconitum carmichaeli*). All herbs are decocted in water, and 300 mL of juice is taken, warm, morning and evening. The medication is administered for 3 months.

Group B orally administered Calcium Dobesilate Capsules (Shanghai Zhaohui Pharmaceutical Co., Ltd.; National Medical Approval Number H20030088; 0.5 g). A single oral administration of 0.5 g, once a day, switched to twice a day after 1 month of medication. The medication is administered for a total of 3 months.

2.4. Observation indicators

(1) Efficacy: Disappearance of DKD symptoms and normalization of UAER is considered effective; reduction of DKD symptoms and a decrease in UAER by more than 50% is considered effective; no significant change in DKD symptoms and UAER is considered ineffective.

(2) Symptom score: Based on symptoms of excessive eating and drinking, spontaneous sweating and night sweats, fatigue, and swelling of the face and feet, scores are assigned from 0–3 according to none, mild, moderate, and severe.

(3) Blood glucose: PBG, FBG, and HbA1c indicators are detected using an automatic biochemical analyzer.

(4) Renal function: SCr is detected by the creatinine enzymatic method, urinary microalbumin is detected by immunoturbidimetric assay, urinary albumin and creatinine are quantitatively measured by an automatic biochemical analyzer to calculate UAER, and β2-MG is detected by immunoturbidimetric assay.

2.5. Statistical analysis

Data is processed using SPSS 23.0, with chi-square test used for counting data (recorded as a percentage) and *t*-test used for measurement data, recorded as mean ± standard deviation (SD). Statistical significance is determined at $P < 0.05$.

3. Results

3.1. Therapeutic effect of DKD

The therapeutic effect of DKD in Group A was higher than that in Group B, $P < 0.05$. See **Table 2**.

Table 2. Comparison of therapeutic effect of DKD patients (*n*, %)

Group	Markedly effective	Effective	Ineffective	Effective rate
Group A ($n = 45$)	36 (80.00%)	8 (17.78%)	1 (2.22%)	44 (97.78%)
Group B ($n = 45$)	28 (62.22%)	10 (22.22%)	7 (15.56%)	38 (84.44%)
χ^2	-	-	-	4.9390
P-value	-	-	-	0.0263

3.2. Syndrome scores of DKD

After treatment, the syndrome score of Group A was lower than that of Group B, $P < 0.05$. See **Table 3**.

Table 3. Comparison of syndrome scores of DKD patients (mean ± SD)

Group	Polyphagia/Polydipsia (scores)		Spontaneous/Night sweating (scores)		Fatigue/Lassitude (scores)		Facial/Pedal edema (scores)	
	Pre-tx	Post-tx	Pre-tx	Post-tx	Pre-tx	Post-tx	Pre-tx	Post-tx
Group A (n = 45)	2.49 ± 0.26	0.61 ± 0.18	2.44 ± 0.27	0.58 ± 0.16	2.47 ± 0.21	0.57 ± 0.18	2.42 ± 0.25	0.61 ± 0.19
Group B (n = 45)	2.47 ± 0.28	1.33 ± 0.21	2.48 ± 0.26	1.35 ± 0.23	2.45 ± 0.22	1.36 ± 0.21	2.39 ± 0.27	1.38 ± 0.23
t	0.3511	17.4626	0.7159	18.4358	0.4411	19.1603	0.5469	17.3142
P	0.7263	0.0000	0.4760	0.0000	0.6602	0.0000	0.5858	0.0000

3.3. Blood glucose levels of DKD

After treatment, the levels of PBG, FBG, and HbA1c in Group A were lower than those in Group B, $P < 0.05$. See **Table 4**.

Table 4. Comparison of blood glucose levels of DKD patients (mean ± SD)

Group	PBG (mmol/L)		FBG (mmol/L)		HbA1c (%)	
	Pre-tx	Post-tx	Pre-tx	Post-tx	Pre-tx	Post-tx
Group A (n = 45)	9.36 ± 1.26	4.88 ± 0.51	12.41 ± 1.72	5.51 ± 1.09	10.41 ± 1.42	6.19 ± 0.88
Group B (n = 45)	9.38 ± 1.28	6.14 ± 0.69	12.43 ± 1.75	7.33 ± 1.43	10.43 ± 1.39	7.48 ± 1.16
t	0.0747	9.8510	0.0547	6.7901	0.0675	5.9433
P	0.9406	0.0000	0.9565	0.0000	0.9463	0.0000

3.4. Renal function indices of DKD

After treatment, SCr, urine microalbumin, UAER, and β2-MG in Group A were lower than those in Group B, $P < 0.05$. See **Table 5**.

Table 5. Comparison of renal function indices of DKD patients (mean ± SD)

Group	SCr (μmol/L)		24h urinary microalbumin (mg)		UAER (μg/min)		β2-MG (μg/L)	
	Pre-tx	Post-tx	Pre-tx	Post-tx	Pre-tx	Post-tx	Pre-tx	Post-tx
Group A (n = 45)	88.14 ± 6.42	81.14 ± 3.25	258.44 ± 6.29	64.25 ± 3.21	11.88 ± 3.25	6.11 ± 1.25	0.46 ± 0.08	0.21 ± 0.02
Group B (n = 45)	88.12 ± 6.39	86.22 ± 4.11	258.41 ± 6.31	96.22 ± 4.68	11.92 ± 3.21	8.01 ± 2.36	0.45 ± 0.07	0.28 ± 0.04
t	0.0148	6.5037	0.0226	37.7900	0.0587	4.7726	0.6311	10.5000
P	0.9882	0.0000	0.9820	0.0000	0.9533	0.0000	0.5296	0.0000

4. Discussion

The pathogenesis of DKD is not yet clear, and relevant scholars believe that it is related to multiple factors such as metabolism, genetics, and living environment. It is more common in obese and middle-aged, and elderly people [4]. In the early stages of DKD, patients do not exhibit specific nephropathy symptoms. A few patients may experience increased glomerular filtration rate and hemodynamic abnormalities. Strenuous exercise or stress reactions may

lead to transient hyperglycemia. As DKD progresses, patients gradually develop symptoms such as foamy urine, edema, anemia, and elevated blood pressure. In severe cases, microvascular complications such as dizziness, palpitations, blurred vision, and acid-base imbalance may occur. DKD is often treated clinically with medication, and calcium dobesilate is commonly used. It can correct microvascular lesions, reduce urinary protein metabolism, and when taken as prescribed, it can dilute the blood, prevent hypercoagulability, optimize renal function, and slow the progression of DKD. However, the effect of calcium dobesilate alone on optimizing renal function is limited. Chinese medicine scholars have conducted in-depth analysis of DKD and categorized it as "kidney fatigue" and "deficiency fatigue". They believe that the pathogenesis of this disease is a deficiency of both Qi and Yin. Therefore, to achieve both symptomatic and root treatment, therapies that nourish essence, tonify the kidneys, and nourish yin should be adopted [5].

Based on the data analysis in this article, the efficacy of treatment for DKD in Group A is higher than that in Group B, and the syndrome score is lower than that in Group B, with $P < 0.05$. The reason for this is analyzed as follows: calcium dobesilate belongs to a vasculoprotective agent that, when orally administered into the human body, can dilute the blood, optimize microcirculation, and reduce the production of vasoactive substances. Moreover, patients with DKD who comply with medical advice and take medication can also downregulate UACR, inhibit the expression of vascular endothelial growth factor in the body, accelerate the regeneration of damaged kidney tissue, and thereby slow down the progression of kidney disease [6]. On this basis, combined with Shenqi Dihuang Decoction, the prescription includes *Radix codonopsis*, which nourishes the lungs, spleen, and Qi, *Astragalus membranaceus*, which reduces swelling and promotes urination, elevates yang and tonifies Qi, *Salviae miltiorrhizae radix* and Rhizoma, which relieves pain, soothes meridians, eliminates blood stasis, and promotes blood circulation, *Rehmanniae radix praeparata*, which nourishes the marrow and essence, nourishes Yin and nourishes blood, Chuanxiong Rhizoma, which relieves pain, dispels wind, and promotes blood circulation, *Angelicae sinensis radix*, which regulates menstruation, promotes blood circulation, and relieves pain, *Dioscoreae rhizoma*, which benefits the kidneys, spleen, astringes essence, tonifies the kidneys, nourishes the stomach, and tonifies the spleen, *Corni fructus*, which benefits the kidneys, nourishes Yin, collects essence, and stabilizes the kidneys, *Alismatis rhizoma*, which drains fire, clears heat, promotes urination, and eliminates dampness, Poria, which promotes urination and tonifies the spleen, and *Moutan cortex*, which eliminates blood stasis, cools blood, and clears heat. The combined use of these herbs in the prescription can achieve the effects of nourishing the spleen and kidneys, nourishing Yin and benefiting Qi, resulting in the rapid resolution of DKD symptoms [7].

According to traditional Chinese medicine scholars, patients with DKD are considered to have a deficiency of both qi and yin as the root cause, while the manifestation is internal accumulation of dampness and turbidity, and blood stasis obstructing the meridians. Over time, this leads to dysfunction of the internal organs, inability to normally output glycogen, imbalance of the blood glucose regulation system, and elevation of FBG. Additionally, abnormalities in the transportation and metabolism of water and grain essence in the body can further increase FBG. Poor dietary habits can exacerbate the burden on the spleen and stomach, or organ dysfunction can lead to insufficient insulin secretion, or internal accumulation of dampness and turbidity, and blood stasis obstructing the meridians can cause poor blood circulation, or long-term emotional stagnation can lead to disordered blood circulation, all of which can result in elevated FBG. Chronically high blood glucose levels can lead to deficiency of both qi and yin, imbalance of yin and yang, further damage to internal organs, and repeated vicious cycles, resulting in elevated HbA1C [8]. The data presented in this article show that the levels of PBG, FBG, and HbA1c in Group A DKD patients are lower than those in Group B, with $P < 0.05$. The reason for this is analyzed as

follows: combined treatment with Shenqi Dihuang Decoction includes active ingredients such as saponins and polysaccharides in *Radix codonopsis* and *Astragalus membranaceus*, which can alleviate insulin resistance, accelerate glucose absorption in the body, and thereby correct metabolic disorders. The synergistic effect of the herbs strengthens the function of nourishing Qi and Yin, restores the balance of Yin and Yang, and stabilizes blood circulation, resulting in a greater reduction in blood glucose levels. The active ingredients in *Dioscoreae rhizoma* can have anti-inflammatory, antioxidant, and protective effects on islet function, inhibiting damage to islet function caused by hyperglycemia. The active ingredients in *Salviae miltiorrhizae radix* and *Rhizoma* can regulate blood lipids and reduce the risk of cardiovascular disease, which is beneficial for stabilizing blood glucose. The active ingredients in *Chuanxiong rhizoma* can accelerate microcirculation, restore tissue oxygenation, and enhance the sensitivity of body tissues to insulin, resulting in more stable blood glucose levels [9]. The combined use of the western medicine calcium dobesilate and Shenqi Dihuang Decoction exerts synergistic effects, including anti-inflammatory and antioxidant properties, and can rapidly repair damaged kidney tissue, which is beneficial for long-term stabilization of blood glucose levels in patients with DKD [10].

Patients with DKD who are continuously in a state of hyperglycemia can develop endogenous blood stasis, which can damage kidney cells, disrupt the glomerular filtration barrier, and increase urine protein levels. Additionally, kidney damage can lead to the leakage of water and grain essence, long-term loss of essence, and downward flow into the bladder, resulting in elevated UAER. Deficiency of kidney yuan and damage to yin and yang can impair kidney nourishment, reduce glomerular filtration function, and increase the accumulation of substances such as creatinine in the body, leading to elevated SCr. Impaired renal tubular function can result in reduced reabsorption of β2-MG and increased excretion in urine, or renal blood stasis can obstruct the renal meridians and continuously damage renal tubular function, also affecting β2-MG metabolism. Alternatively, during the progression of DKD, patients may experience accumulation of dampness and heat in the body, leading to the formation of phlegm and obstruction, which can further aggravate renal tubular damage, manifesting as elevated β2-MG levels [11]. The final set of data presented in this article shows that SCr, urine microalbumin, UAER, and β2-MG levels in Group A are lower than those in Group B, with $P < 0.05$. The reason for this is analyzed as follows: treatment of DKD with Shenqi Dihuang Decoction includes ingredients such as Poria and *Rehmanniae radix praeparata*, which inhibit oxidative reactions, reduce glomerular function damage, and protect the filtration barrier, thereby reducing urine protein levels and preventing water and sodium retention. The components of *Radix codonopsis* can have antioxidant and lipid-regulating effects, slowing down kidney cell death. When combined with Poria, it enhances the antioxidant response and reduces oxidative stress-induced damage to healthy kidney function, facilitating kidney function recovery. The active ingredients in *Alismatis rhizoma* can optimize the body's metabolic function and protect islet cells, stabilizing blood glucose levels. When combined with *Dioscoreae rhizoma*, it enhances antioxidant effects and corrects glucose metabolism disorders, reducing the harmful effects of hyperglycemia and improving the prognosis of patients with DKD [12].

5. Conclusion

In summary, the combination of western medicine calcium dobesilate and Shenqi Dihuang Decoction for the treatment of patients with DKD demonstrates excellent efficacy, with stable blood glucose levels, improved renal function indicators, and reduced syndrome scores, indicating its value for widespread application.

Disclosure statement

The authors declare no conflict of interest.

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