

Exploring the Potential of Traditional Chinese Medicine to Prevent Diabetes Mellitus Based on System Generalisation and Data Mining

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Abstract: This paper systematically reviews the traditional Chinese medicine (TCM) medication rules and therapeutic methods for diabetes to provide a reference for further research. With consumptive thirst and diabetes as keywords, the databases, as well as the 2025 edition of the Chinese Pharmacopoeia and the classics of traditional Chinese medicine were searched. A total of 361 TCM prescriptions involving 321 herbs were collected. The most frequently used herbs were Astragali Radix, Glycyrrhizae Radix Et Rhizoma, Rehmanniae Radix, Coptidis Rhizoma, Poria, and Dioscoreae Rhizoma. These herbs were mostly cold, warm, or flat in nature, sweet, bitter, or pungent in taste, and mainly acted on the liver, lung, stomach, spleen, and kidney meridians. Common herb pairs included Astragali Radix–Rehmanniae Radix, Astragali Radix–Salviae Miltiorrhizae Radix Et Rhizoma, and Astragali Radix–Dioscoreae Rhizoma. TCM therapy for diabetes combines medicinal and non-medicinal approaches, with core principles of reinforcing qi and nourishing yin, tonifying the kidney and invigorating the spleen, supplemented by acupuncture, Tuina, and dietary therapy. TCM also emphasizes preventive treatment of disease, advocating healthy lifestyles, reasonable diets, moderate exercise, and regular physical examinations, which are important for diabetes prevention and management.

1. Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by hyperglycemia, resulting from insufficient insulin secretion, insulin resistance, or both^[1]. Its typical manifestations include polydipsia, polyuria, polyphagia, and weight loss. As a common chronic disease with high prevalence, numerous complications, a long course, and a genetic predisposition, DM is classified into type 1, type 2, gestational, and other specific types^{[2][3]}. It can damage multiple organs including the heart, brain, blood vessels, kidneys, and nervous system, and has become the third leading non-communicable disease worldwide after cardiovascular diseases and cancer^{[4][5]}. China has the world's largest diabetic population, with a continuing upward trend^[6]. In TCM, diabetes is

categorized as consumptive thirst, mainly caused by insufficient innate constitution, emotional disturbances and improper diet, with yin deficiency and dryness-heat as the core pathogenesis^{[7][8][9]}. TCM exhibits unique advantages in regulating glucose metabolism, alleviating complications and minimizing adverse reactions, thus exerting significant effects in the prevention and treatment of diabetes. This article reviews the medication rules and treatment methods of diabetes in order to provide a reference for further research on the disease.

2. Medication rules

2.1. Methods

With consumptive thirst and diabetes as key words, a database of prescriptions for the treatment of diabetes was established by using Microsoft Excel 2019 through Chinese Pharmacopoeia and databases such as CNKI, Google Scholar, PubMed, Web of Science, SpringerLink, Wiley, Wanfang database, Baidu Scholar. Statistical analysis of the nature and flavor of the drugs involved, and calculation of the frequency of occurrence. The correlation analysis of drugs was performed using IBM SPSS Modeler 18.0 software. Microsoft Excel 2019 was used to analyze the mutual information entropy (MIE) of drugs. Cluster analysis of drugs was performed using IBM SPSS Statistics 26.0 software.

2.2. Results

2.2.1. Analysis of drug use frequency

Table 1: High frequency drug frequency, frequency table (frequency ≥ 40 times).

No.	Drug	Frequency	Frequency (%)
1	Astragali Radix	166	4.88
2	Glycyrrhizae radix et rhizoma	115	3.38
3	Rehmanniae Radix	107	3.15
4	Coptidis Rhizoma	103	3.03
5	Poria	99	2.91
6	Dioscoreae Rhizoma	97	2.85
7	Salviae Miltiorrhizae Radix Et Rhizoma	93	2.74
8	Puerariae lobatae radix	86	2.53
9	Ophiopogonis Radix	86	2.53
10	Trichosanthis Radix	69	2.03
11	Alismatis Rhizoma	62	1.82
12	Rehmanniae Radix	61	1.79
13	Rehmanniae Radix Praeparata	61	1.79
14	Schisandrae Chinensis Fructus	60	1.77
15	Corni Fructus	56	1.65
16	Atractylodis Macrocephalae Rhizoma	56	1.65
17	Angelicae Sinensis Radix	53	1.56
18	Anemarrhenae Rhizoma	46	1.35
19	Lycii Fructus	44	1.29
20	Scutellariae radix	41	1.21
21	Scrophulariae Radix	41	1.21
22	Chuanxiong Rhizoma	40	1.18

According to statistics, a total of 361 prescriptions for the treatment of diabetes were collected, involving 321 drugs, with a cumulative frequency of 3399 times. Among them, the high-frequency

(frequency ≥ 40 times) drugs are Astragali Radix, Glycyrrhizae Radix Et Rhizoma, Rehmanniae Radix, Coptidis Rhizoma, Poria, Dioscorea Opposita, etc. See Table 1 for details.

2.2.2. Analysis of drug flavor meridian tropism

The medicinal properties, tastes and meridian tropism of 321 herbs were statistically analyzed. It was found that the medicinal properties were mainly cold, warm and flat. The main flavors were sweet, bitter and pungent. The drugs were mainly attributed to liver, lung, stomach, spleen and kidney. See Figure 1.

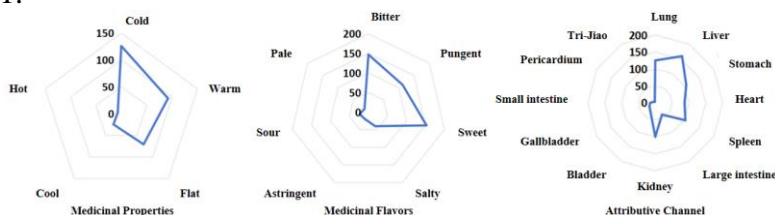


Figure 1: Analysis of drug taste and meridian tropism.

2.2.3. Drug association analysis

The association rules of 321 herbs were analyzed. Based on the Apriori algorithm, under the condition of support $\geq 10\%$ and confidence $\geq 70\%$, a total of 15 association rules were screened, including *Trichosanthis Radix* + *Rehmanniae Radix* \rightarrow *Astragali Radix*, *Puerariae lobatae radix* + *Salviae Miltiorrhizae Radix Et Rhizoma* \rightarrow *Astragali Radix*, *Puerariae lobatae radix* + *Rehmanniae Radix* \rightarrow *Astragali Radix*, etc. See Table 2 for details.

Table 2: Chinese medicine association rule analysis table (support $\geq 10\%$, confidence $\geq 70\%$).

No.	Association rules	Example	Support (%)	Confidence (%)
1	<i>Trichosanthis Radix</i> + <i>Glycyrrhizae radix et rhizoma</i> \rightarrow <i>Astragali Radix</i>	42	11.63	83.33
2	<i>Puerariae lobatae radix</i> + <i>Salviae Miltiorrhizae Radix Et Rhizoma</i> \rightarrow <i>Astragali Radix</i>	40	11.08	82.50
3	<i>Puerariae lobatae radix</i> + <i>Glycyrrhizae radix et rhizoma</i> \rightarrow <i>Astragali Radix</i>	39	10.80	82.05
4	<i>Dioscoreae Rhizoma</i> + <i>Glycyrrhizae radix et rhizoma</i> \rightarrow <i>Astragali Radix</i>	39	10.80	82.05
5	<i>Codonopsis Radix</i> \rightarrow <i>Astragali Radix</i>	39	10.80	79.49
6	<i>Ophiopogonis Radix</i> + <i>Dioscoreae Rhizoma</i> \rightarrow <i>Astragali Radix</i>	39	10.80	79.49
7	<i>Schisandrae Chinensis Fructus</i> \rightarrow <i>Astragali Radix</i>	61	16.90	78.69
8	<i>Rehmanniae Radix Praeparata</i> + <i>Dioscoreae Rhizoma</i> \rightarrow <i>Poria</i>	37	10.25	78.38
9	<i>Polygonati Rhizoma</i> \rightarrow <i>Astragali Radix</i>	38	10.53	76.32
10	<i>Corni Fructus</i> \rightarrow <i>Dioscoreae Rhizoma</i>	60	16.62	75.00
11	<i>Trichosanthis Radix</i> + <i>Astragali Radix</i> \rightarrow <i>Glycyrrhizae radix et rhizoma</i>	48	13.30	72.92
12	<i>Corni Fructus</i> \rightarrow <i>Astragali Radix</i>	46	12.74	71.74
13	<i>Rehmanniae Radix Praeparata</i> + <i>Dioscoreae Rhizoma</i> \rightarrow <i>Corni Fructus</i>	37	10.25	70.27
14	<i>Schisandrae Chinensis Fructus</i> + <i>Ophiopogonis Radix</i> \rightarrow <i>Astragali Radix</i>	37	10.25	70.27
15	<i>Chuanxiong Rhizoma</i> \rightarrow <i>Astragali Radix</i>	40	11.08	70.00

2.2.4. Drug MIE analysis

321 kinds of herbs can be composed of 6719 drug pairs, and their MIE values were calculated. The drug pairs with high MIE values were *Astragali Radix*-*Rehmanniae Radix*, *Astragali Radix*-*Salviae Miltiorrhizae Radix Et Rhizoma*, *Astragali Radix*-*Dioscoreae Rhizoma*, *Puerariae lobatae radix*-*Astragali Radix*, *Astragali Radix*-*Ophiopogonis Radix*, etc. See Table 3 for details.

Table 3: MIE values of drug pairs (top 20).

No.	Drug pair	Frequency	Frequency(%)	MIE value
1	Rehmanniae Radix-Astragali Radix	67	18.56	0.3864
2	Salviae Miltiorrhizae Radix Et Rhizoma-Astragali Radix	62	17.17	0.3622
3	Astragali Radix-Dioscoreae Rhizoma	61	16.90	0.3521
4	Puerariae lobatae radix-Astragali Radix	59	16.34	0.3467
5	Astragali Radix-Ophiopogonis Radix	57	15.79	0.3326
6	Rehmanniae Radix-Ophiopogonis Radix	51	14.13	0.3177
7	Dioscoreae Rhizoma-Corni Fructus	45	12.47	0.2984
8	Astragali Radix-Schisandrae Chinensis Fructus	48	13.30	0.2900
9	Astragali Radix-Trichosanthis Radix	48	13.30	0.2829
10	Salviae Miltiorrhizae Radix Et Rhizoma-Rehmanniae Radix	46	12.74	0.2765
11	Poria-Dioscoreae Rhizoma	45	12.47	0.2712
12	Poria-Alismatis Rhizoma	41	11.36	0.2646
13	Rehmanniae Radix-Trichosanthis Radix	42	11.63	0.2630
14	Glycyrrhizae radix et rhizoma-Astragali Radix	49	13.57	0.2599
15	Poria-Astragali Radix	47	13.02	0.2554
16	Coptidis Rhizoma-Astragali Radix	46	12.74	0.2466
17	Salviae Miltiorrhizae Radix Et Rhizoma-Puerariae lobatae radix	40	11.08	0.2442
18	Ophiopogonis Radix-Schisandrae Chinensis Fructus	37	10.25	0.2412
19	Atractylodis Macrocephalae Rhizoma-Poria	37	10.25	0.2388
20	Dioscoreae Rhizoma-Rehmanniae Radix Praeparata	37	10.25	0.2359

2.2.5. Drug cluster analysis

Cluster analysis was performed on 22 high-frequency Chinese medicines. Pearson correlation was used as the standard interval, and the average connection (between groups) was used. The results are shown in Figure 2. According to the results of cluster analysis, the high-frequency drugs for the treatment of diabetes can be divided into 4 groups, and the results are shown in Table 4.

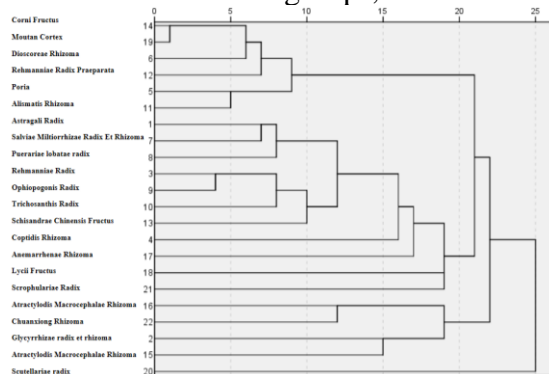


Figure 2: High-frequency Chinese medicine cluster analysis spectrum.

Table 4: Cluster analysis results of high-frequency herbs.

Group	Composition of Chinese medicine
C1	Corni Fructus, Moutan Cortex, Dioscoreae Rhizoma, Rehmanniae Radix Praeparata, Poria, Alismatis Rhizoma
C2	Astragali Radix, Salviae Miltiorrhizae Radix Et Rhizoma, Puerariae lobatae radix, Rehmanniae Radix, Ophiopogonis Radix, Trichosanthis Radix, Schisandrae Chinensis Fructus, Coptidis Rhizoma, Anemarrhenae Rhizoma, Corni Fructus, Scrophulariae Radix
C3	Angelicae Sinensis Radix, Chuanxiong Rhizoma, Glycyrrhizae radix et rhizoma, Atractylodis Macrocephalae Rhizoma
C4	Scutellariae radix

3. Therapy

3.1. Drugs

Drug therapy is a major clinical approach in TCM, characterized by holistic regulation and multi-target effects^[10]. TCM treatment emphasizes syndrome differentiation and overall conditioning, addressing both disease symptoms and restoring the body's yin-yang and five-element balance to improve general health. For diabetes, TCM principles include benefiting qi, nourishing yin, clearing heat, activating blood circulation, and regulating the internal environment, thereby enhancing immunity and glycemic control^[11]. Modern research demonstrates the considerable potential of single herbs and compound formulas in diabetes management. Yu BW et al. reported that Astragali Radix regulates glucose and lipid metabolism and alleviates insulin resistance in diabetic rats with atherosclerosis^[12]. Yang F et al. found that puerarin reduces weight loss, blood lipids, and blood glucose in type 2 diabetes mellitus (T2DM) rats^[13]. Wang LJ et al. demonstrated that Shenqi Maiwei Dihuang Decoction improves clinical symptoms and decreases fasting plasma glucose (FPG), 2-hour postprandial glucose (2 h PG), and glycated hemoglobin (HbA1c) in T2DM patients with qi-yin deficiency^[14].

3.2. Acupuncture

Acupuncture is an important component of TCM, featuring wide indications, minimal side effects, simplicity, safety, and eco-friendliness. In diabetes management, acupuncture and moxibustion act on specific acupoints to dredge meridians, promote blood circulation, balance yin and yang, reinforce healthy qi, and regulate visceral function. These effects alleviate subjective symptoms such as restlessness, thirst, and fatigue, while preventing or reducing diabetic complications including nephropathy, peripheral neuropathy, gastroparesis, and diabetic foot. Zhao ZH applied acupuncture to type 2 diabetic nephropathy patients with spleen deficiency and dampness, and found reduced urinary protein, HbA1c, blood glucose, and inflammation after 24 weeks of treatment^[15]. Yu B et al. demonstrated that acupuncture improves nerve conduction velocity and relieves clinical symptoms in diabetic peripheral neuropathy, enhancing therapeutic efficacy^[16]. Li XM et al. reported that acupuncture and moxibustion exhibit unique advantages in diabetic gastroparesis, effectively controlling blood glucose, improving symptoms, and boosting overall treatment outcomes compared with conventional therapies^[17].

3.3. Tuina

Tuina is a safe, simple external therapy in TCM. It improves immune function, cerebral cortex activity, blood circulation and glucose metabolism by stimulating meridians and acupoints, relieving fatigue, insomnia and other diabetic symptoms, and preventing complications. However, its hypoglycemic effect is limited when used alone, and it performs better in combination with medication. Studies have confirmed that massage techniques such as kneading and pressing activate meridians and promote qi and blood circulation^[18]. Zhou W et al. reported that Yiqi Tongluo Decoction combined with Tuina regulates blood glucose, reduces inflammation and promotes wound repair^[19]. Sang JJ et al. found that Jianpi Huazhuo Tuina alleviates symptoms and glucose metabolism disorders and improves intestinal flora imbalance in type 2 diabetes patients^[20]. Yuan G et al. demonstrated that Yunfu Jiangzhuo Tuina plus Xiaoxianxiong Decoction improves glycolipid metabolism and inhibits inflammation in obese type 2 diabetes patients safely and effectively^[21].

3.4. Diet

Diet therapy is the most fundamental intervention for diabetes, with broad indications. As an adjunct to medication and other therapies, it helps control blood glucose, improve insulin resistance, reduce body weight, alleviate oxidative stress, and assist in managing complications. Studies have shown that foods such as pumpkin, *Dioscoreae Rhizoma*, buckwheat, Coix Seed, and medicinal diets exert beneficial effects on glycemic regulation^[22]. Wei BY et al. reported that medicinal diet supplementation significantly reduces blood glucose, HbA1c, and urinary protein levels in early diabetic nephropathy, while alleviating related clinical symptoms^[23]. Yang B et al. found that a spleen-strengthening and dampness-resolving diet effectively controls blood glucose and delays diabetes progression in pre-diabetic individuals^[24]. Lu AQ et al. demonstrated that the Sanyang Jiaomai diet reduces body weight, improves metabolic disorders, and lowers hypoglycemic drug dependence in overweight/obese type 2 diabetes patients^[25].

3.5. Living habits

Lifestyle is critical in diabetes management, involving regular daily routines, moderate exercise, and emotional stability. Balanced diet, physical activity, smoking and alcohol restriction, weight control, adequate sleep, stress management, and regular blood glucose monitoring contribute to better glycemic control, lower complication risks, and improved quality of life. These healthy habits also reduce drug dependence and medical costs while enhancing self-management. Given individual differences, such interventions should be personalized and performed under medical guidance. Previous studies have demonstrated that lifestyle and exercise interventions effectively control blood glucose and reduce adverse pregnancy outcomes in gestational diabetes^[26]. Habit education also improves insulin injection adherence and glycemic control in type 2 diabetes patients^[27]. A close relationship between daily habits and glycemic control further supports the essential role of healthy lifestyles in diabetes management^[28].

4. Conclusion

In TCM, diabetes is attributed to qi-yin deficiency and yin-yang imbalance, and is commonly treated with qi-tonifying, yin-nourishing, kidney-nourishing, and spleen-invigorating herbs. High-frequency medications include *Astragali Radix*, *Glycyrrhizae Radix Et Rhizoma*, *Rehmanniae Radix*, *Coptidis Rhizoma*, *Poria*, and *Dioscoreae Rhizoma*. These herbs are mostly cold, warm, or neutral in nature, sweet, bitter, or pungent in taste, and act on the liver, lung, stomach, spleen, and kidney meridians. Frequent herb pairs include *Astragali Radix-Rehmanniae Radix*, *Astragali Radix-Salviae Miltiorrhizae Radix Et Rhizoma*, and *Astragali Radix-Dioscoreae Rhizoma*. TCM manages diabetes through both medicinal and non-medicinal therapies, the latter including acupuncture, tuina, diet, and lifestyle interventions. Overall, comprehensive therapy combining medication with non-pharmacological approaches is applied^[29]. Based on syndrome differentiation, TCM restores yin-yang balance via holistic regulation and multi-target effects. This multi-dimensional comprehensive treatment improves overall function, enhances efficacy, reduces complications, and achieves long-term diabetes control.

The global incidence of diabetes is rising annually, associated with genetics, lifestyle, diet, and environmental factors. Diabetes prevention and control rely on healthy diets, regular exercise, weight management, smoking cessation, alcohol restriction, and blood glucose monitoring. Personalized dietary plans based on food properties and TCM constitution can also be applied for glycemic regulation. Future research should integrate modern biology and molecular biology to explore the etiology, pathogenesis, and therapeutic mechanisms of TCM for diabetes. Scientific and

clinical evidence will further optimize treatment strategies and provide more effective interventions for diabetic patients.

References

- [1] Mallik S, Paria B, Firdous SM, Ghazzawy HS, Alqahtani NK, He Y, Li X and Gouda MM. (2024) The positive implication of natural antioxidants on oxidative stress-mediated diabetes mellitus complications. *Journal of Genetic Engineering and Biotechnology*, 4,100424.
- [2] Zeng J. (2016) Chinese medicine understanding and dialectical treatment of diabetes. *Jilin Journal of Chinese Medicine*, 3, 228-232+266.
- [3] Diabetes Branch of Chinese Medical Association. (2021) *Chinese Guidelines for the Prevention and Treatment of Type 2 Diabetes(2020 Edition)*, 4, 315-409.
- [4] Meng XY, Guo SM, Yang LX. (2017) Effect of Traditional Chinese Medicine Polysaccharides in Resisting Type 2 Diabetes Insulin. *Chinese Journal of Experimental Traditional Medical Formulae*, 8, 220-225.
- [5] Niu J, Xu G, Jiang S, Li H and Yuan G. (2017) In Vitro Antioxidant activities and anti-diabetic effect of a polysaccharide from *Schisandra sphenanthera* in rats with type 2 diabetes. *International Journal of Biological Macromolecules*, 94, 154-160.
- [6] Chen ZY, Yang SY. (2017) Research progress on the pathophysiological mechanism of traditional Chinese medicine in improving insulin resistance in type 2 diabetes mellitus. *Fujian Medical Journal*, 3, 140-142.
- [7] Mei HY, Shi LX. (2019) *Zhongjing Fang 's diagnosis and treatment of diabetes*. *Global Chinese Medicine*, 5, 772-774.
- [8] Li HJ, Shi Y, Yang YF. (2016) *The Progress of TCM Understanding and Research of Diabetes*. *Guide of China Medicine*, 15, 34-35.
- [9] Liang JQ. (2022) *Effect of Sanggehuazhuo Decoction on Renal Protection and AGEs-RAGE Signaling Pathway in Diabetic Renal Injury Rats*. *Shandong University of Traditional Chinese Medicine*.
- [10] Tian ZY, Ma LL, Zhang BW, La XJ, Zhang T, Wang JY, Li JY, Han RJ and Li JA. (2024) Exploring the ferroptosis of islet cells in type 2 diabetes mellitus from the perspective of spleen based on the "homology of spleen and pancreas" theory. *Journal of North China University of Science and Technology*, 2, 164-168.
- [11] Hu YY, Jiang XG, Wang SY, Yang AJ, Chen Q and Lang L. (2025) Study on the Effect of Buxu Xiaoke Mixture Combined with Coenzyme Q10 on Type 2 Diabetes Mellitus Based on Network Pharmacology. *Special Wild Economic Animal and Plant Research*, 4, 112-123.
- [12] Yu BW, Pan XQ, Chen JD and Hu Z. (2021) Effect of *Astragalus* Polysaccharides on Glucose and Lipid Metabolism in Diabetic Atherosclerosis Rats and Vascular Endothelial Protection Mechanism. *Journal of Zhejiang Chinese Medical University*, 5, 447-453.
- [13] Yang F, Dong XX, Guo Y. (2019) Effects of puerarin on rats with type 2 diabetes mellitus. *Chinese Journal of Applied Physiology*, 4, 355-358.
- [14] Wang LJ, Lu CX. (2024) *Shenqi Maiwei Dihuang Decoction in Treating Type 2 Diabetes Mellitus of Deficiency of Qi and Yin Type*. *Chinese Medicine Modern Distance Education of China*, 14, 66-68.
- [15] Zhao ZH. (2019) Study on the effect and mechanism of regulating spleen and stomach acupuncture in the treatment of type 2 diabetic nephropathy with spleen deficiency and dampness. *Tianjin University of Traditional Chinese Medicine*.
- [16] Yu B, Li M, Huang H, Ma S, Huang K, Zhong Z, Yu S and Zhang L. (2021) Acupuncture treatment of diabetic peripheral neuropathy: An overview of systematic reviews. *Journal of Clinical Pharmacy and Therapeutics*, 3, 585-598.
- [17] Li X, Yan Z, Xia J, Sun Y, Gong P, Fan Y, Wang X and Cui X. (2022) Traditional Chinese acupoint massage, acupuncture, and moxibustion for people with diabetic gastroparesis: A systematic review and meta-analysis. *Medicine (Baltimore)*, 48, e32058.
- [18] Zhang LM. (2021) Application of auricular point sticking with *Semen Vaccariae* combined with acupoint massage in nursing of patients with type 2 diabetes mellitus. *Chinese Remedies & Clinics*, 22, 3788-3790.
- [19] Zhou W, Zheng HB, Feng S. (2023) Effect of Yiqi Tongluo Decoction combined with massage on the wound recovery in diabetic foot patients. *Jilin Journal of Chinese Medicine*, 2, 237-240.
- [20] Sang JJ, Tao Q, Hao F, Xiong ZK, Hu J and Wu YC. (2023) Effect of 'Invigorating the Spleen and Transforming the Turbidity' Tuina on Glucose Metabolism and Intestinal Flora in Patients with Type 2 diabetes Mellitus. *Clinical Journal of Traditional Chinese Medicine*, 1, 155-160.
- [21] Yuan G, Song BL. (2021) Clinical effect of the Yunfu Jiangzhuo massage therapy combined with Xiaoxianxiong Decoction in the treatment of obese patients with type 2 diabetes mellitus. *Jilin Journal of Chinese Medicine*, 8, 1105-1108.
- [22] Ye BH, Lin L, Zheng KL. (2022) Exploration on the Application of Dietotherapy in the Treatment of Diabetes.

Chinese Medicine Modern Distance Education of China, 3, 199-202.

[23] Wei BY, Zheng SY. (2017) *Clinical observation on treating 37 cases of diabetic nephropathy with medicinal diet. Clinical Journal of Chinese Medicine*, 26, 63-64.

[24] Yang B, Dai N, Wu Y. (2021) *Effect of Jianpi Qushi Diet recipe on pre-diabetes patients with phlegm-dampness constitution. Clinical Journal of Chinese Medicine*, 15, 31-33.

[25] Lu AQ, Zhang JD, Li HL, Wang GS, Ma L, Ai LR, Zuo L, Wu ZM, Ye J and Zhou YQ. (2010) *Effect of Jianpi Qushi Diet recipe on pre-diabetes patients with phlegm-dampness constitution. Clinical Journal of Chinese Medicine*, 8, 696-697.

[26] Zhai XL. (2020) *Application value of exercise and lifestyle intervention in pregnant women with gestational diabetes. Practical Clinical Journal of Integrated Traditional Chinese and Western Medicine*, 11, 149-150.

[27] Gao FF, Wang RL, Che C, Wu PL and Wang ZW. (2019) *The Effect of Habit Formation Education on the Knowledge, Belief, and Practice(KBP)Level of Insulin Standard Injection and Quality of Life among patients with type 2 diabetes. Chinese Journal of Health Education*, 10, 940-943.

[28] Shen WW. (2018) *Study on the correlation between the living habits of patients with type 2 diabetes and their blood glucose control effect. Contemporary Medical Symposium*, 10, 48-50.

[29] Cai SH, Guo MR, Li JY, Xu MZ and Fan YD. (2023) *Analysis on the Influencing Factors of High Hospitalization Expenses for Diabetic Patients in a Traditional Chinese Medicine Hospital. Chinese Medical Record*, 12, 62-66.