

Research on the Progress of Chronic Kidney Disease Malnutrition with Traditional Chinese Medicine

Xiaoyu Zhou¹, Genping Lei^{2,*}, Sheng Dong², Ting Wang²

¹*Shaanxi University of Chinese Medicine, Xiayang, Shaanxi, 712046, China*

²*Department of Nephrology, Affiliated Hospital of Shaanxi University of Traditional Chinese Medicine, Xiayang, Shaanxi, 712000, China*

**Corresponding author*

Keywords: Chronic kidney disease, Malnutrition, Traditional Chinese medicine treatment, Summarize

Abstract: Malnutrition is one of the common complications of chronic kidney disease, and it is also an important cause of death of patients. The incidence and degree of malnutrition increase with the development of chronic kidney disease. Therefore, early detection and timely intervention should be made to protect kidney function, correct malnutrition at the same time, delay the progress of the disease and improve the quality of life of patients. Traditional Chinese medicine is an important part of China's excellent traditional culture, and it is still widely used to treat various diseases. In this paper, through consulting China HowNet, we collected the related literatures on the treatment of chronic kidney disease malnutrition with traditional Chinese medicine in recent years, and then made a summary by sorting out and summarizing them. It can provide some references for future research in this field.

1. Introduction

Chronic kidney disease (CKD) refers to chronic renal structural and functional disorders caused by different causes. The history of renal damage is more than 3 months. Clinical CKD through timely and effective treatment, can make the progress of the disease relatively slow; but if mistreatment, mistreatment, it will lead to deterioration or delay of the disease, rapid development into chronic renal insufficiency, renal failure, the ultimate destination-uremia.

CKD malnutrition is mainly caused by the abnormal protein metabolism, especially the abnormal synthesis and decomposition of muscle protein during the development of CKD, which leads to the clinical manifestations such as mental malaise, fatigue, fatigue, anorexia, weight loss, albumin reduction, low immunity, muscle thinness and anemia on the basis of CKD. CKD patients will appear local or systemic inflammation, examination of related inflammatory factors and C-reactive protein show increased, studies[1]. have proved that microinflammatory state can directly lead to malnutrition. The International Society of Nephrology and Metabolism put forward the concept of protein energy expenditure (PEW), which assesses whether the body is in a state of nutritional deficiency through four items: muscle loss, biochemical indicators, weight changes and diet. Related studies have shown that[2], patients with stage CKD2 have developed PEW, especially in

patients with end-stage renal disease, the probability of PEW is as high as 75%. At present, the clinical assessment of CKD malnutrition is mainly through the following aspects:①anthropometry;②diet survey;③biochemical indicators;④subjective comprehensive nutrition assessment;⑤body composition analysis;⑥inflammatory indicators.

2. Epidemiological Investigation on Nutritional Status of Ckd

CKD is another disease that seriously affects human life after cardio-cerebrovascular disease, hypertension, diabetes and malignant tumor. In recent years, the global incidence of CKD is increasing year by year[3]. Related investigation shows[4]. that the incidence of CKD in China is relatively high, of which malnutrition accounts for 12%-40%. Especially in the later stage of the disease, when patients need dialysis treatment, malnutrition will become the main cause of disease progression or death. With the aging process of our society, combined with the characteristics of the disease, CKD malnutrition is more common in the elderly population[3]. After nutritional screening[5], it was found that the incidence of malnutrition in patients with chronic renal failure increased sharply after dialysis treatment. The nutritional risk and the incidence of malnutrition in peritoneal dialysis patients were significantly lower than those in hemodialysis patients. Maintenance hemodialysis patients will gradually develop protein-energy malnutrition in the course of treatment. Relevant data show that[6], hemodialysis complicated with mild to moderate malnutrition accounts for about 33%, while severe malnutrition accounts for about 6% to 8%. Retrospective analysis of clinical data showed[7] that renal function was closely related to nutritional status in patients with CKD. Related laboratory tests found that blood urea nitrogen and serum creatinine were negatively correlated with hemoglobin and red blood cell count. The nutritional status of CKD aggravates with the damage of renal function, including water and electrolyte disorders, acid-base imbalance, hypoalbuminemia, anemia and other diseases, which aggravate the damage of renal function and form a vicious circle. Therefore, we must attach great importance to the nutritional treatment of CKD patients and correct the malnourished state of the body in time, so as to delay the disease and improve the quality of life of patients.

3. Etiology and Pathogenesis

The concept of “CKD malnutrition” is not recorded in the ancient books of Chinese medicine. According to its clinical manifestations, the disease can be classified into “edema”, “asthenic fatigue”, “kidney wind”, “urosis”, “guan ge” and other categories of Chinese medicine. The common causes of this disease are congenital deficiency, acquired dystrophy, emotional disharmony, old age and physical asthenia, and excessive atrial fatigue. The pathogenesis is always based on the deficiency of origin and marked by the deficiency of origin[8]. The disease is mainly located in the kidney, involving the lungs, spleen, bladder, liver, heart and other organs, among which the kidney, spleen and lung are the most closely related. Liu Chengli[9] pointed out that the spleen is the foundation of acquired life, the source of qi and blood biochemistry, which is the main source of transportation and depends on the warmth of life and fire; The kidney is the foundation of nature, which is the master of essence and needs to be supplemented by the spleen essence. There is a view that “the spleen yang is rooted in the kidney yang”. Both of them reflect the relationship between congenital and acquired mutual sustenance. Therefore, the deficiency of qi and blood in both spleen and kidney organs is the root of this disease. Ding Yingjun et al.[10] believed that “kidney collateral stasis” is a common pathogenesis of CKD, and stasis refers to accumulation of blood stasis, qi stagnation, phlegm and turbid toxin, among which blood stasis is the core. The number of kidney collaterals is large and small. Qi and blood flow through the whole body. When

evil qi attacks, it is very easy to block the kidney collaterals, causing damage to kidney function. Over time, it causes dysfunction of multiple viscera in the body. For the body, on the one hand, the spleen and stomach are weak, the blood and Qi are passive, and the kidney essence is deficient, resulting in less and less nutrients generated, which is not enough to be used by the body; On the other hand, pathological products block the pulse channels, causing unfavorable qi mechanism, which leads to the inability of the fine substances to be transported, distributed and nourished normally. The early symptoms of CKD malnutrition are not obvious and are easy to be ignored. In the middle and late stages, the body suffers from a loss of healthy qi, and evil qi such as qi stagnation, phlegm turbidity, and water dampness invades the venation, blocking qi and blood, and causing blood stasis due to a long course of disease; Stasis in the body for a long time can also cause the generation of pathological products such as phlegm dampness, water drinking and turbid toxin. Etiology and pathological products interact to promote the further development of the disease[11]. In addition, it is easy to induce digestive system diseases and worsen malnutrition in the middle and late stages of the disease.

4. Related Experimental Research

In order to further study the therapeutic effect of traditional Chinese medicine on CKD malnutrition, many doctors use the existing modern scientific and technological means to carry out more in-depth discussion and analysis through relevant experimental research and using the data obtained. Xu Ye[12]observed the effect of Sijunzi decoction on skeletal muscle atrophy in CKD model mice. It was found that after 2 weeks of administration, the body mass, skeletal muscle weight and muscle fiber thickened significantly. In addition, the levels of serum creatinine and blood urea nitrogen were significantly lower than those before treatment, indicating that Sijunzi decoction could improve the renal function of CKD malnourished mice, reduce the expression of apoptosis-promoting genes in skeletal muscle and inhibit the activity of muscle-specific E2 ligase. Relieve skeletal muscle atrophy and gain weight. Deng Cong[13]discussed the effect of Shenshuai Yangzhen capsule on UPP pathway in malnourished rats with chronic renal failure. The results showed that when Shenshuai Yangzhen capsule was used to treat model rats, blood urea nitrogen, serum creatinine and 24-hour urinary protein decreased significantly, while serum albumin and hemoglobin increased, indicating that Shenshuai Yangzhen capsule could improve the malnutrition status of chronic renal failure. The mechanism may be related to the inhibition of the activity of UPP pathway and the decrease of the expression of Ub, MAFbx and MuRF-1 proteins, thus reducing protein decomposition. Wang Ming[14]proved that Renshen Yangrong decoction could effectively improve the nutritional status of rats with chronic renal failure induced by adenine. It was found that after 4 weeks of treatment, the levels of serum albumin and hemoglobin increased significantly, the body weight increased significantly, the expression of hypothalamic signal transduction protein STAT3 decreased and the expression of PIAS3 increased, which decreased the secretion of leptin and increased the appetite of patients to some extent. Increase the intake of nutrients and promote the body to produce energy to maintain life. Du Yajing[15]studied the effect of Bushen Paidu mixture on the nutritional status of rats with chronic renal failure. After 6 weeks of administration, the nutritional indexes such as albumin, hemoglobin, red blood cell and triglyceride were significantly improved, and the weight of rats was significantly increased. Appetite improved and the degree of anemia relieved. It shows that Bushen Paidu mixture can promote the synthesis of protein, improve the state of anemia and regulate lipid metabolism. It can significantly regulate the nutritional status of chronic renal failure.

5. Traditional Chinese Medicine Treatment

5.1 Single Drug Treatment

Modern pharmacology found that[16]astragalus contains a variety of amino acids and trace elements, total astragalus flavonoids, astragalosides, etc., which can improve renal fibrosis and microcirculation, regulate the distribution and expression of proteins on podocytes, promote liver synthesis of albumin, reduce urinary protein, regulate lipid metabolism, prevent platelet and erythrocyte aggregation, and improve water and sodium retention. The prescriptions commonly used in clinic to treat CKD and contain astragalus are as follows[17]: Fangji Huangqi decoction, Danggui Buxue decoction, Shenqi Dihuang decoction and Buzhong Yiqi decoction. The dosage of Astragalus membranaceus in the prescription is too large, and 60g, 100g, 150g gradually increase to 200g. Fangji Huangqi decoction is mainly used in the treatment of nephrotic syndrome, Shenqi Dihuang decoction is mainly used in the treatment of IgA nephropathy. Astragalus membranaceus can promote glomerulus to decompose macromolecular protein in urine[18], convert it into small molecular amino acid and be absorbed by the body, so it can reduce the content of protein in urine and increase the concentration of albumin in serum; therefore, while protecting the kidney, astragalus can also effectively improve the malnutrition of patients.

Rhubarb is often used as the king medicine of rhubarb classic prescription, studies have shown that[19]using rhubarb or its classical prescription to treat CKD dystrophy can protect the remaining nephron, reduce renal vascular permeability, reduce the leakage of protein in urine, and then protect renal function; it can also improve azotemia, correct anemia, enhance immunity, regulate blood lipids, promote the excretion of metabolites and improve nutritional status. In clinic, the dosage of rhubarb in the prescription of rhubarb was adjusted to treat chronic renal failure[20]. Results: the clinical symptoms and related nutritional indexes of the patients were improved, and there was significant difference compared with that before treatment ($P<0.05$). Especially the effect of the use of high-dose rhubarb, its effective rate is 66.67%, achieving the improvement of malnutrition.

Bailing capsule is made from *Cordyceps sinensis* under artificial low temperature fermentation and is rich in nutrients such as cellulose, alkaloids and amino acids. It is found that [21~22]bailing capsule can reduce urine protein, improve renal function, regulate immunity, improve micro-inflammatory state, promote protein synthesis and decomposition, increase the utilization of amino acids, reduce cholesterol and so on. Because it can effectively resist the side effects of hormones, it is a commonly used proprietary Chinese medicine preparation for the clinical treatment of CKD. Zhang Peng[23]observed the improvement of malnutrition in patients with CKD3 and stage 4 treated with bailing capsule for 3 months. the results were as follows: compared with the control group, the levels of blood urea nitrogen, serum creatinine, total cholesterol and C-reactive protein in the treatment group were significantly lower than those in the control group, and the scores of subjective comprehensive nutritional assessment were mostly grade A, indicating that bailing capsule could protect the kidney, effectively improve the nutritional status of patients and improve the quality of life.

5.2 Compound Treatment

5.2.1 Treatment Based on Syndrome Differentiation

According to many years of clinical experience combined with symptoms, many TCM scholars treat CKD malnutrition based on syndrome differentiation, and the results show that all of them are effective. Gui Zhihong[24]summed up that the pathogenesis of CKD malnutrition is always the decline of viscera function, retention of excess and evil such as dampness, blood stasis and turbid

toxin, loss of qi and blood yin and yang, lowering adverse flow and purging turbidity, replenishing qi and activating blood circulation are the important treatments of this disease. Shenkang injection is composed of rhubarb, salvia miltiorrhiza, safflower and astragalus. Shenkang injection was used to treat CKD malnutrition clinically. It was found that Shenkang injection could significantly reduce the levels of blood urea nitrogen, serum creatinine and micro-inflammatory indexes, increase the levels of total protein, albumin, prealbumin, hemoglobin and red blood cells, and increase body weight, arm circumference and other anthropometric indexes. It shows that this method can effectively improve the state of malnutrition and regulate the state of microinflammation in CKD. Chen Jiebin[25]believes that the method of tonifying spleen and kidney, dredging viscera and purging turbid is the main method for the treatment of maintenance hemodialysis malnutrition and microinflammation. The treatment group takes tonifying spleen and kidney and Tongfu Xiezhuo recipe on the basis of routine treatment. Radix Astragali, Atractylodes macrocephala and Codonopsis pilosula in the prescription can enhance the effect of tonifying qi and invigorating the spleen; Radix Astragali and Rhubarb can slow down renal fibrosis, improve renal function and improve related nutritional indexes. Amomum villosum can improve the efficacy of resolving dampness and qi, and Angelica can enhance the effect of tonifying blood, promoting blood circulation and removing blood stasis. All kinds of medicines are played together, taking into account both the specimen and the root, attacking and tonifying, tonifying and purging. It is in line with the pathogenesis of spleen and kidney deficiency and turbid poison injuring the kidney. Yang Liyan[26]to study the effect of Yishen Jiangzhuo granule on PEW of patients with spleen and kidney qi deficiency in CKD4 stage. Radix Astragali, Radix Pseudostellariae, Poria and Atractylodes macrocephala are the king drugs for invigorating spleen and replenishing qi, tonifying kidney and essence, rhubarb, Achyranthes bidentata, motherwort, mulberry and June snow are courtier drugs for promoting blood circulation and removing blood stasis, promoting dampness and removing turbid; tangerine peel is an adjuvant to assist the king and minister medicine Jianpi for qi dryness and dampness. Results: the curative effect of combination of traditional Chinese and western medicine was obviously better than that of pure western medicine. in the process of use, the granule could obviously relieve the symptoms of discomfort, and had good safety without adverse reactions, especially in protecting kidney, increasing protein synthesis, correcting anemia and improving nutritional index. He Qingwei[27]to observe the effect of Caohua covered basin granule on malnutrition in CKD3~4 stage (kidney deficiency and blood stasis syndrome). The granule has the effect of invigorating spleen and kidney, dispelling blood stasis and removing turbidity, and is rich in nutrients. Cordyceps sinensis flower tonifies the qi of the spleen and kidney and realizes the root of the same sequence; raspberry tonifying kidney and astringent retention, reducing frequent urination and protein content in urine; peach kernel promoting blood circulation and promoting toxin generation; shepherd's purse flower clearing heat and diuresis, regulating spleen and stomach function and improving the utilization of fine substances. After 8 weeks of treatment, it was found that the content of some amino acids in serum increased in varying degrees, renal function improved, hemoglobin, albumin and other nutritional indexes increased, indicating that Caohua Raspberry granule can significantly improve the nutritional status of patients.

5.2.2 Famous Experts' Experience

Professor Zhang Daning, a master of traditional Chinese medicine[28], believes that with the development of chronic renal failure, the body will gradually appear micro-inflammatory state, increase the burden of kidney, but also lead to anemia, malnutrition and so on. Therefore, the method of “tonifying the kidney and promoting blood circulation” is put forward in the treatment: ①righting and fastening is based on regulating various nutritional indexes by strengthening the spleen and strengthening the kidney, so as to protect the kidney and improve the function of the

kidney. ②replenishing qi and activating blood, dispelling dampness and resolving turbidity is the key to traditional Chinese medicine that “qi is the handsome of blood and blood is the mother of qi”. Zhang Lao pointed out that the use of blood-activating drugs such as *Panax notoginseng*, safflower and *salvia miltiorrhiza* can promote the operation of blood and the formation of qi. It can significantly improve the symptoms caused by qi deficiency and blood stasis, accelerate the toxin metabolism accumulated in the body and improve the state of micro-inflammation.③emphasize the integration of traditional Chinese and western medicine.④if you take care of the course of spleen and stomach disease for a long time, the spleen and stomach function of the patients is most easily damaged, the water grain is not accepted enough, the nutrition is not fine, and malnutrition is easy to occur in the long term. Professor Zhang Binghou[29]emphasized the importance of nourishing kidney yin and seeking yang in yin in the treatment of CKD, and put forward eight methods of tonifying kidney and creating turtle prescriptions. Self-made Qingbudigui decoction and Digui decoction were used to treat hypertensive nephropathy and nephrotic syndrome respectively. After treatment, the clinical symptoms of the patients were significantly improved, and the related nutritional indexes such as serum albumin and hemoglobin were significantly improved. After two years of treatment, the edema disappeared and the syndrome was greatly relieved. It is suggested that Qingbudigui decoction and Di Gui Tang are effective in the treatment of CKD patients. Professor Lukoda[30]treated CKD complicated with PEW. According to the theory of “removing blood stasis and giving birth to new, unobstructing kidney collaterals” and “spleen governing muscle”, “Buyang Huanwu decoction” was combined with Sijunzi decoction to form a special prescription (group prescription: Raw astragalus membranaceus 30g, Peach kernel 12g, *Achyranthes bidentata* 12g, Earthworm 12g, rhubarb 10g, Plantain herb 20g)-Yiqi Jianpi Xiaoyu Xiezhuo decoction. Patients with chronic renal failure were treated with western medicine, and then took the second prescription. After one month of treatment, the symptoms of spleen and kidney deficiency, turbidity and blood stasis block were obviously relieved, the renal function was normal, and the levels of hemoglobin and albumin returned to normal. It shows that the special prescription can not only benefit the kidney, remove blood stasis and dispel turbid, but also strengthen the spleen and promote the fine production of qi and blood and water grain, nourish the muscles of the whole body, and fundamentally improve the state of PEW.

5.3 External Therapy of Traditional Chinese Medicine

Huang Donghua[31]studied the effect of retention enema of traditional Chinese medicine on the condition of patients with diabetic nephropathy 400mL solution was made with raw rhubarb, *Coptis chinensis*, *Sophora sophora*, *Salvia miltiorrhiza*, dandelion and raw oyster once a day. It was found that the related biochemical indexes and nutritional status of the patients were significantly improved after treatment, especially the symptoms such as nausea and vomiting were significantly alleviated. It shows that this method has a strong effect of promoting blood circulation and removing blood stasis, dredging viscera and purging turbid, which can promote the discharge of turbid yin from the lower orifice, gradually regulate the body function, and reduce the risk of aggravation of the disease. Xu Yun[32]60 patients with nephrotic syndrome were randomly divided into the control group and the treatment group. The treatment group was given bilateral Shenshu point and Zusanli injection of astragalus injection on the basis of routine treatment in the control group. It was observed that 24 hours urinary protein, total cholesterol and triglyceride decreased and albumin increased in both groups after treatment. The total effective rate of the treatment group was 93.3%, while that of the control group was 80%, indicating that injection of astragalus injection into bilateral Shenshu points and Zusanli can improve the nutritional status of patients with nephrotic syndrome. Li Zheng[33]observed the clinical efficacy of acupuncture combined with

methylprednisolone and cyclophosphamide in the treatment of severe membranous nephropathy, mainly at Shenshu, Guanyuan, Qihai, Sanyinjiao, Zusanli and Quchi. It was found that in the treatment group, glomerular filtration rate increased, 24-hour urinary protein decreased significantly, blood lipid decreased and serum albumin significantly increased, indicating that this method can protect the kidney and regulate malnutrition. Zou Hua[34] and others use low-frequency pulse combined with kidney-tonifying and blood-activating traditional Chinese medicine to treat diabetic nephropathy, use specific frequency radio waves to stimulate acupoints, improve local blood circulation of the human body, and then cooperate with traditional Chinese medicine to fundamentally recuperate yin and yang, tonify the congenital foundation and recuperate the acquired foundation. Results: the renal blood circulation was significantly improved and the levels of albumin and hemoglobin were increased. It shows that the combination of internal and external treatment can not only protect renal function, but also delay the progress of the disease, and reduce the nutritional risk to a certain extent.

5.4 Diet Therapy

Traditional Chinese medicine believes that “medicine and food are of the same origin, medicine and food are of the same origin”, and traditional Chinese medicine still has its own unique views on the treatment of CKD malnutrition. Yan Shuzhen[35] observed the clinical efficacy of wheat starch flavored diet in the treatment of chronic renal failure, which was made of astragalus, Hawthorn, Shenqu, yam, Poria cocos and wheat starch. The course of the disease lasts for a long time, the spleen and stomach rise and fall dereliction of duty, fine matter can not be transported, nourishing the whole body, resulting in nutritional problems gradually appear in the body. The medicinal diet has the effect of invigorating the spleen and invigorating dampness, and from the point of view of nutrition, it has the advantages of high starch, high calorie, high quality and low protein. On the one hand, it can reduce kidney damage, on the other hand, it can correct renal anemia and improve nutritional status. Wu Xiaojun[36] selected Chinese yam Shudi lean meat soup to treat early diabetic nephropathy, the herbal diet is rich in nutrients, yam invigorates spleen and stomach, tonifies kidney qi, fennel adjusts stomach, lean meat has less fat, it is easy to feel full after eating, it can reduce food intake, and then reduce blood sugar, and to a certain extent, it can reduce the burden on the kidney and reduce the occurrence of nutritional risk. Qin Shiju[37] and others were treated with astragalus porridge with spleen and kidney qi deficiency in CKD3 stage and white Poria porridge with water-dampness-removing prescription. There were significant differences in nutritional indexes, 24-hour urinary protein, glomerular filtration rate and SF-36 scores before and after treatment ($P < 0.05$).

6. Conclusion

Malnutrition is a common complication in the progression of chronic kidney disease and one of the causes of death. Impaired renal function affects the abnormal operation of many systems in the body, resulting in a series of nutritional problems, such as listlessness, weight loss, muscle atrophy, lack of trace elements, low immunity and so on. Therefore, early detection and early treatment has become the key to delay the disease. Western medicine is indeed effective in the treatment of this disease[38], but the means of treatment is limited and there are adverse reactions in the process of treatment. Traditional Chinese medicine attaches importance to the overall concept in thought, advocates dialectical treatment in treatment, formulates corresponding treatment plans according to the clinical symptoms of patients, pays close attention to the changes of the disease, and adjusts the use of drugs in time. While protecting the kidney, we should pay attention to the changes in nutrition, delay the progress of the disease and improve the quality of life. Compared with western

medicine, traditional Chinese medicine is easier to achieve individual treatment, in the treatment of both internal and external treatment, in addition, when the condition is stable, it can also be treated with medicinal diet. And traditional Chinese medicine in the treatment process of reliable efficacy, high safety, low price is more easily accepted by patients, so traditional Chinese medicine in the treatment of chronic kidney disease malnutrition has irreplaceable advantages.

References

- [1] Yan Yan, Hong Mingyu, Wang Nianshong, et al. The relationship between micro inflammation, albumin, prealbumin and malnutrition in patients with non dialysis renal failure [J]. *Chinese Journal of Nephrology with Integrated Traditional and Western Medicine*, 2009, 10 (06): 520-523.
- [2] *Chinese Clinical Practice Guide for Nutrition Therapy of Chronic Renal Disease (2021 Edition)* [J]. *Chinese Medical Journal*, 2021 (08): 539-559.
- [3] Kong Jianhua, Zhang Jie, Hua Yingying, et al. Nutrition risk screening and analysis of elderly patients with chronic kidney disease [J]. *Chinese Journal of Gerontology*, 2016, 36 (22): 5711-5713.
- [4] K/DOQI, National Kidney Foundation. Clinical practice guidelines for nutrition in chronic renal failure. *Am J Kidney Dis*, 2000, 35(6 Suppl 2): S17-S104.
- [5] Ding Xiaoping, Xing Xiaohong, Chen Jing, et al. Screening of nutritional risk in 1813 patients with kidney disease [J]. *Journal of PLA Nursing*, 2015, 32 (22): 74-76.
- [6] Lin Qizhan, Zhou Min, Song Zhizhi, et al. Effect of Jianpi Bushen Huoxue Plaster on malnutrition in maintenance hemodialysis patients [J]. *Chinese Journal of Traditional Chinese Medicine*, 2012, 27 (06): 1709-1711.
- [7] Wen Ting. Analysis of the relationship between nutritional status and renal function in patients with chronic kidney disease [J]. *Electronic Journal of Clinical Medicine Literature*, 2017, 4 (35): 6765-6766.
- [8] Bao Yaqiong, Liu Jiasheng. TCM's understanding of the etiology and pathogenesis of chronic kidney disease malnutrition inflammation atherosclerosis syndrome [J]. *Gansu Medicine*, 2014, 33 (10): 745-747.
- [9] Liu Chengli, Qiu Shijun, Liu Xiaobin. Discussion on the connotation of spleen and kidney related theories of traditional Chinese medicine [J]. *Journal of Guangzhou University of Traditional Chinese Medicine*, 2009, 26 (05): 491-494.
- [10] Ding Yingjun, Cai Jimin, Pan Li, et al. The common pathogenesis theory and clinical significance of "kidney collateral stasis" in chronic kidney disease [J]. *Shi Zhen National Medicine*, 2011, 22 (03): 690-691.
- [11] Song Ziwei. Systematic review and meta-analysis of nutritional status of traditional Chinese medicine and chronic kidney disease [D]. *Beijing University of Traditional Chinese Medicine*, 2021.
- [12] Xu Ye, Yuan Yuan, Li Zhiming. Effect of Sijunzi Tang on skeletal muscle atrophy in mice with chronic kidney disease and its mechanism [J]. *Journal of Liaoning University of Traditional Chinese Medicine*, 2021, 23 (04): 27-31.
- [13] Deng Cong, Wei Lianbo, Wang Dongtao, et al. Effect of Shenshuaiyangzhen Capsule on UPP pathway in rats with chronic renal failure and malnutrition [J]. *Chinese Journal of Integrated Traditional and Western Medicine*, 2018, 38 (03): 356-360.
- [14] Wang Ming, Wang Yanjing, Xu Xuan, et al. Effect of Ginseng Yangrong Decoction on STAT3 and PIAS3 in hypothalamus of rats with adenine induced CRF malnutrition [J]. *Pharmacology and Clinical of Traditional Chinese Medicine*, 2011, 27 (02): 13-16.
- [15] Du Yajing, Yu Junsheng, Zhuang Wenqing, et al. Effect of Bushen Paidu Mixture on the nutritional status of rats with chronic renal failure [J]. *Shandong Journal of Traditional Chinese Medicine*, 2004 (08): 495-496.
- [16] Sun Xizhao, Du Jinyun, Chen Wei, et al. Observation on the efficacy of high-dose astragalus combined with low-molecular-weight heparin in the control of proteinuria in stage III - IV of diabetes nephropathy [J]. *Chinese Journal of Nephropathy of Integrated Traditional and Western Medicine*, 2006 (06): 348-349.
- [17] Yang Liu, Li Aiping, Zhang Wangning, et al. Research progress on the pharmacological effect and clinical application of astragalus and its containing prescriptions in the treatment of nephrosis [J]. *Chinese Herbal Medicine*, 2018, 49 (14): 3419-3424.
- [18] Tao Lihua, Wang Zhanglian, Sun Jing, et al. Effect of different doses of astragalus decoction on albuminuria metabolism in rats with adriamycin nephropathy [J] *Zhejiang Journal of Traditional Chinese Medicine*, 2008 (10): 579-580.
- [19] Sun Hua, Pan Xingshan, Xie Haitang. Systematic evaluation of rhubarb in treating chronic renal failure [J]. *Chinese Medical Guide*, 2012, 10 (23): 614-615.
- [20] Zhou Dongmei. Clinical observation on the treatment of chronic renal failure with rhubarb in different doses of traditional Chinese medicine [D]. *Chengdu University of Traditional Chinese Medicine*, 2014.
- [21] Chen Di, Wu Fumin. Efficacy of Bailing Capsule in the adjuvant treatment of primary nephrotic syndrome and its influence on cellular immune function and micro inflammatory state [J]. *Shaanxi Traditional Chinese Medicine*, 2017,

38 (12): 1670-1672.

[22] Zhang Jianjun, Xie Shengyang. *Meta analysis of Bailing capsule in treating nephrotic syndrome [J]. China Modern Applied Pharmacy*, 2013, 30 (08): 907-910.

[23] Zhang Peng, Wang Xiaoyong. *The effect of Bailing capsule on malnutrition and renal function of patients with chronic kidney disease in stages 3 and 4 [J]. Shaanxi Traditional Chinese Medicine*, 2021, 42 (01): 54-56.

[24] Gui Zhihong, Zhang Xiaoru, Liao Yifei, et al. *The effect of the method of replenishing qi, activating blood, dredging the fu organs and removing turbidity on the status of protein and energy consumption in patients with chronic kidney disease [J]. Chinese Journal of Nephropathy with Integrated Traditional and Western Medicine*, 2015, 16 (01): 27-29.

[25] Chen Jiebin, Lu Lu, Lai Weilan, et al. *Effect of the method of invigorating spleen and kidney, dredging fu organs and removing turbidity on malnutrition and micro inflammation in patients with maintenance hemodialysis [J]. Sichuan Traditional Chinese Medicine*, 2018, 36 (01): 105-108.

[26] Yang Liyan. *Clinical Study on the Effect of Yishen Jiangzhuo Granule on Protein and Energy Consumption of Patients with Chronic Kidney Disease Phase 4 of Spleen and Kidney Qi Deficiency [D]. Fujian University of Traditional Chinese Medicine*, 2016.

[27] He Qingwei. *Clinical Study on the Nutritional Treatment of Chronic Renal Disease (Kidney Deficiency and Blood Stasis Syndrome) with Caohua Covered Basin Granule [D]. Shanxi University of Traditional Chinese Medicine*, 2020

[28] Zhao Ya, Zhang Mianzhi, Fan Weiwei, et al. *Experience of Zhang Daning, a Chinese medical master, in treating chronic renal failure with micro inflammation [J] Chinese Journal of Traditional Chinese Medicine*, 2021,36 (09): 5278-5280.

[29] Zhao Wenjing, Cai Zhen, Meng Yuan, etc. *The application of Zhang Binghou's method of nourishing kidney yin in the treatment of chronic kidney disease [J] Beijing Journal of Traditional Chinese Medicine*, 2016, 35 (04): 341-343.

[30] Yang Dan, Lu Keda, Xia Hong, et al. *Mechanism and Treatment of Protein and Energy Consumption in Chronic Renal Disease Complicated by Yiqi Jianpi Xiaoyu Xiezhu Formula [J] Journal of Zhejiang University of Traditional Chinese Medicine*, 2021,45 (09): 962-967+976.

[31] Huang Donghua. *Effect of retention enema of traditional Chinese medicine on condition control of patients with diabetes nephropathy [J]. Diabetes New World*, 2015 (13): 100-101.

[32] Xu Yun. *Research on the clinical efficacy of acupoint injection of astragalus membranaceus injection as an auxiliary treatment for nephrotic syndrome [J]. Liaoning Medical Journal*, 2017, 31 (06): 21-22+27.

[33] Li Zheng, Jia Yinghui, Yang Libao, et al. *Clinical observation on 35 cases of severe membranous nephropathy treated with acupuncture plus methylprednisolone and cyclophosphamide [J] Anhui Medical Journal*, 2018,22 (06): 1174-1178.

[34] Zou Hua, Li Xiuhua, Hu Jing, et al. *Clinical observation on 36 cases of diabetes nephropathy treated with traditional Chinese medicine combined with low-frequency pulse [J]. Chinese Folk Therapy*, 2017, 25 (04): 54.

[35] Yan Shuzhen. *The clinical effect of modified wheat starch medicated diet on chronic renal failure [J]. Journal of Practical Medicine*, 2017, 34 (03): 230-232.

[36] Wu Xiaojun. *Analysis of the effect of the application of Chinese medicine dietotherapy in the early stage of diabetes nephropathy [J]. Diabetes New World*, 2015 (03): 41.

[37] Qin Shiju, Wan Changxiu, Zhou Qiong, et al. *Three Phase Randomized Parallel Controlled Study of Chinese Medicine Diet Nursing Chronic Kidney Disease [J]. Journal of Practical Chinese Medicine Internal Medicine*, 2013, 27 (15): 79-81.

[38] Yu Hui, Peng Wen, Wang Yunman. *Advantages of TCM in treating chronic kidney disease [J]. Jilin Journal of Traditional Chinese Medicine*, 2014, 34 (06): 637-639.