Review Article

Meta-Analysis of Clinical Efficacy and Safety of *Tripterygium wilfordii* Polyglycosides Tablets in the Treatment of Chronic Kidney Disease

Yan-Li Guo,¹ Feng Gao,¹ Tai-Wei Dong,¹ Yang Bai,² Qiao Liu,¹ Ruo-Lan Li,¹ Shu-Ting Yan,¹ Mei Chen,³ Pei-Feng Wei,¹,² and Miao-Miao Xi²

¹Shaanxi University of Traditional Chinese Medicine, Shaanxi 712046, China
²The Second Affiliated Hospital of Shaanxi University of Traditional Chinese Medicine, Shaanxi 712000, China
³Affiliated Hospital of Shaanxi University of Chinese Medicine, Shaanxi 712000, China

Correspondence should be addressed to Mei Chen; 627680460@qq.com and Pei-Feng Wei; peifeng_ad@163.com

Received 9 December 2020; Revised 15 March 2021; Accepted 24 March 2021; Published 15 May 2021

Academic Editor: Priscila Souza

Copyright © 2021 Yan-Li Guo et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Objective.** *Tripterygium wilfordii* polyglycosides tablets (TGt) is an oral preparation extracted from plant *Tripterygium wilfordii*. It has the effects of anti-inflammation and inhibition of cellular and humoral immunity. However, many reports of adverse reactions caused by TGt have limited its application. In this paper, the clinical efficacy and safety of TGt in the treatment of chronic kidney disease (CKD) were verified by data mining and analysis, so as to provide theoretical data support for the application and development of TGt.

**Methods.** A computer search of the following databases was conducted: PubMed, Web of Science, CBM, VIP, Wanfang Data, and CNKI. The search time limit is from the establishment of the database to September 2020. We searched for clinical randomized controlled trials of TGt in the treatment of CKD. The main types of CKD involved are nephrotic syndrome (NS), primary nephrotic syndrome (PNS), refractory nephrotic syndrome (RNS), and IgA nephropathy (IgAN). RevMan 5.2 and Stata 12.0 software were used to evaluate the literature quality and analyze the data. Finally, GRADEpro software was used to evaluate the quality of evidence. The results of the meta-analysis showed that TGt could reduce 24-hour urinary protein, increase serum albumin, improve clinical efficacy, and reduce disease recurrence rate in patients ($P < 0.05$) with CKD compared with adrenocortical hormones or immunosuppressants. TGt could significantly reduce the level of serum creatinine (Scr) in patients with CKD ($P < 0.05$), but it was not significant in reducing the level of blood urea nitrogen ($P > 0.05$). In terms of safety evaluation, in patients with CKD, it could significantly reduce the incidence of gastrointestinal adverse reactions and neurogenic dizziness and headache ($P < 0.05$). However, in terms of adverse reactions such as liver injury, respiratory infection, and leukopenia, TGt was as harmful as corticosteroids or immunosuppressants ($P < 0.05$). The quality of the evidence was evaluated with GRADEpro software, and the results showed that TGt was strongly recommended for the treatment of CKD.

**Conclusion.** TGt has certain efficacy in the treatment of CKD and has fewer side effects in certain types of diseases. Therefore, more high-quality literature data from different countries are needed.

1. Introduction

Kidney Disease: Improving Global Outcomes (KDIGO) organization defines chronic kidney disease (CKD) as abnormal kidney structure or function, which has an impact on health, lasting for 3 months [1]. Chronic kidney disease is a global public health problem, with a global prevalence rate of about 8–16% [2]. Growth disorders are common in patients with chronic kidney disease, and studies have found that there are significant changes in the axes of growth hormone, insulin-like growth factor-1, and insulin-like growth factor binding protein in these patients. The reason is tissue resistance to growth
hormone rather than growth hormone deficiency [3]. Some studies have also found that insulin resistance is associated with the deterioration of renal function in patients with chronic kidney disease [4]. Significant changes in intestinal flora in patients with chronic kidney disease are considered to be an important factor leading to chronic inflammation. The study found that there were changes in the number and composition of intestinal bacteria in end-stage patients [5]. Anorexia is a common clinical manifestation in patients with chronic kidney disease, especially when renal function deteriorates. Some studies have shown that interleukin-6 and tumor necrosis factor-α were involved in appetite suppression in patients with chronic kidney disease. Leptin, a member of the interleukin-6 family, also plays a role in promoting inflammation in patients with chronic kidney disease [6, 7].

The prevalence of CKD in the United States rose from 13.8% in 2016 to 14.5% in 2017, and the number of cases of end-stage renal disease (ESRD) rose from 727912 in 2016 to 746557 in 2017. In 2017, the total health insurance expenditure for CKD and ESRD patients in the United States exceeded $120 billion, accounting for 7.2% of the total health insurance payments. According to the data of China Blood purification Case Information Registration System, by the end of 2018, there were about 580000 hemodialysis patients and 95000 peritoneal dialysis patients in China [8]. However, the main primary diseases of ESRD are primary glomerular disease, diabetic nephropathy, and so on. Nephrotic syndrome (NS) [9] shows a group of clinical symptoms of massive albuminuria, hypoproteinemia, high edema, and hyperlipidemia. NS can be divided into three categories: primary, secondary, and hereditary. Primary nephrotic syndrome (PNS) belongs to primary glomerular disease. The pathological type includes IgA nephropathy (IgAN), which accounts for about 30% of primary nephrotic syndrome. Secondary nephrotic syndrome is often caused by diabetic nephropathy (DN) and systemic lupus erythematosus. TGt is a fat-soluble mixture extracted from the root of Tripterygium wilfordii. It is the first anti-inflammatory and immunomodulatory Chinese herbal medicine studied and used in China, which is called “Chinese herbal hormone” [10]. TGt has the effects of anti-inflammation, immunosuppression or immune regulation, and antitumor. The scope of clinical application is very wide. Many studies have shown that TGt is effective in the treatment of many kinds of NS and RNS [11]. It can reduce the permeability of glomerular filtration membrane and reduce the excretion of urinary protein [12]. However, in recent years, the promotion of TGt has been seriously hindered by more and more reports of liver, kidney, and blood system damage caused by TGt. The purpose of this paper is to review a large amount of clinical data to verify the efficacy and safety of TGt in the treatment of CKD. It is expected to provide strong data support for the rational application of TGt.

2. Method

2.1. Data Retrieval. The literature comes from a published randomized controlled trial of TGt in the treatment of CKD. A computer search of the following databases was carried out: China National Knowledge Infrastructure (CNKI), VIP, Wanfang, Chinese Biomedical, Web of Science, Elsevier ScienceDirect, and Wiley Online Library. Both Chinese and English literature retrieval adopt the way of combining subject words with free words. The time of literature retrieval is from the establishment of the database to September 2020. The key words include “Tripterygium wilfordii polyglycoside tablets,” “Tripterygium wilfordii preparation,” “chronic kidney disease,” “IgA nephropathy,” “nephrotic syndrome,” “primary nephrotic syndrome,” “refractory nephrotic syndrome,” “diabetic nephropathy,” and “primary glomerular disease.”

2.2. Inclusion and Exclusion Criteria. The inclusion criteria are as follows: ① All randomized controlled trials evaluating TGt in English and Chinese were included. ② All the subjects were diagnosed with NS, PNS, RNS, and IgAN, regardless of sex, age, and race. ③ The experimental group was treated with TGt, which was not limited by dose and course of treatment. ④ The control group included basic routine treatment.

The exclusion criteria are as follows: ① the literature containing TGt in the control group was excluded. ② Animal experiments, conference papers, reviews, and so on were excluded. ③ Nonrandomized controlled trials were excluded.

2.3. Literature Screening, Data Extraction, and Quality Evaluation. Two researchers independently screened the literature, extracted the main data and information included, and cross-checked them. When screening the literature, the final inclusion of the literature is determined according to the order of reading title, abstract, and full text. The data information includes the name of the first author, the year of publication, the number of studies included, the number of effective treatments, intervention measures, course of treatment, outcome indicators, adverse reactions, type of trial design, random method, and blind method. If there are any differences, they shall be resolved through discussion or negotiation with the third author. If necessary, the author is consulted about the data indicators not mentioned in the literature. The quality of each article was evaluated according to the RCT bias risk assessment tool recommended by Cochrane.

2.4. Outcome Index. The clinical efficacy of TGt in the treatment of CKD included total clinical effective rate (total effective rate = (complete remission + partial remission)/total number × 100%), recurrence rate, 24-hour urinary protein, serum creatinine (Scr), blood urea nitrogen (BUN), and plasma albumin levels. According to the Chinese guidelines for evaluating the curative effect of glomerular disease [13], complete remission refers to the decrease of 24-hour urinary protein to ≤0.2 g/L, serum albumin ≥35 g/L, and the renal function being normal or improved. Partial remission refers to the decrease of 24-hour urine protein to 0.21–3.4 g/d, the relative baseline decrease of proteinuria by ≥50%, and the stability of renal function. Inefficacy refers to continuous treatment for 3
months without relief of symptoms or improvement or deterioration of urine protein test results. Recurrence refers to the occurrence of urinary protein $\geq 3.5\, \text{g/d}$ after more than one month of remission. The main purpose of safety evaluation is to evaluate the incidence of adverse reactions. The adverse reactions are mainly manifested in the discomfort or harm to the digestive system, reproductive system, endocrine system, bone marrow and blood system, cardiovascular system, and nervous system [14].

**Figure 1:** Results of literature screening.

---

**Abbreviations**

NS  Nephrotic Syndrome  
RNS  Refractory Nephrotic Syndrome  
PNS  Primary Nephrotic Syndrome  
MN  Membranous Nephropathy  
IgAN  IgA Nephropathy  
DN  Diabetic Nephropathy  
VIP  VIP Database for Chinese Technical Periodicals  
Wanfang  Wanfang Database  
CBM  Chinese Database of Biology and Medicine  
CNKI  Chinese National Knowledge Infrastructure  
RCT  Randomized Controlled Trial
| Author          | Year   | Disease | Included in the study | Follow-up time (mo) | Course of disease (y) | Intervention measures                  |
|-----------------|--------|---------|-----------------------|--------------------|----------------------|----------------------------------------|
| Tan Wei [15]    | 2014 NS| 15/15   | 20/10                 | 6–12               | 1.13                 | TG Glucocorticoid                      |
| Li Peng [16]    | 2018 NS| 30/30   | 33/27                 | 6                  | 1.52 ± 1.41          | TG Prednisone                          |
| Luo Minghua [17]| 2018 NS| 48/48   | 56/40                 | 6                  | 5.1 ± 1.9/4.9 ± 1.7  | TG Prednisone                          |
| Shi Qingwan [18]| 2018 NS| 50/50   | —                    | 6                  | 19 ± 6.7/18 ± 5.7    | TG Prednisone acetate                  |
| Guo Peng [19]   | 2016 NS| 40/40   | 43/37                 | 3                  | 8.2 ± 1/7.5 ± 1.2    | TG CTX                                 |
| Song Bo [20]    | 2018 NS| 36/35   | 38/33                 | 6                  | 14.53 ± 6.35/1.7    | TG Prednisone                          |
| Ye Lan [21]     | 2015 NS| 30/30   | 42/18                 | 18–24              | —                    | TG Methylprednisolone + dipiridamole   |
| Chang Xuejing [22]| 2013 NS| 41/41   | 66/22                 | 18–24              | —                    | TG Methylprednisolone + dipiridamole   |
| Deng Shuitian [23]| 2017 NS| 36/36   | 43/29                 | 8                  | 3.9 ± 1.9/3.8 ± 1.2  | TG Prednisone acetate + CTX            |
| Jiang Xiaoli [24]| 2014 NS| 31/31   | 38/24                 | 6                  | 8 ± 41/8.7 ± 4.5     | TG Methylprednisolone                  |
| Jiang Chunxia [25]| 2016 NS| 24/24   | 27/21                 | 56.07 ± 6.97/5.2   | —                    | TG Methylprednisolone                  |
| Liao wen [26]   | 2016 NS| 56/56   | 57/55                 | 6                  | 0.8 ± 0.38/0.79 ± 0.4| TG Methylprednisolone                  |
| Wan Dangguo [27]| 2020 NS| 60/60   | 36/24                 | 6                  | 3.5 ± 0.94           | TG Methylprednisolone                  |
| Zhang Liangy [28]| 2019 NS| 44/44   | 47/41                 | 12                 | 3.18 ± 1.08/1.02    | TG Methylprednisolone                  |
| Deng Minghua [29]| 2014 NS| 23/23   | 21/25                 | 2                  | —                    | TG Sufficient prednisone               |
| Zhou Zhaoxie [30]| 2018 NS| 45/45   | 50/40                 | 12                 | 3.2 ± 1/3.2 ± 1      | TG Prednisone                          |
| Niu Hejun [31]  | 2015 NS| 20/20   | 24/16                 | 12                 | 0.25–10              | TG Prednisone                          |
| Zhang Peiguang [32]| 2019 NS| 25/25   | 28/22                 | 6                  | 1.57 ± 0.22          | TG Basics + prednisone acetate         |
| Yan Lingzhi [33]| 2014 NS| 30/30   | 38/22                 | 3                  | 10.8 ± 3.5/6.9 ± 3.1 | TG CTX                                 |
| Chen Fang [34]  | 2012 NS| 50/50   | 46/54                 | 3–6                | 0.5–12               | TG CTX                                 |
| Liu Qian [35]   | 2017 NS| 41/41   | 53/29                 | 6                  | 2.9 ± 1.1/2.8 ± 1.3  | TG Prednisone                          |
| Gao Xiaofeng [36]| 2019 NS| 42/42   | 34/50                 | 6                  | 0.94 ± 0.39/0.41    | TG Basics + MMF                        |
| Ni Ying [37]    | 2017 NS| 60/60   | 51/69                 | 6                  | 1.12 ± 0.71/0.68    | TG MMF                                 |
| Zhao Jingyu [38]| 2018 NS| 36/36   | 39/33                 | 6                  | 1.61 ± 0.27/0.24    | TG Basic + prednisone acetate          |
| Wu Wensheng [39]| 2019 NS| 42/42   | 41/43                 | 6                  | 1.64 ± 0.86/0.58    | TG Regular + prednisone                |
| Xiong Xinnong [40]| 2019 NS| 40/40   | 45/35                 | 3–6                | 5.1 ± 1.5/5.2 ± 1.3  | TG Prednisone                          |
| Liu Fan [41]    | 2017 NS| 64/64   | 73/55                 | 6                  | 1.62 ± 0.68/1.5    | TG Prednisone                          |
| Zhang Zhifang [42]| 2015 NS| 40/40   | 49/31                 | 6                  | 1.25 ± 1.24/1.34    | TG Prednisone                          |
| Lai Lijun [43]  | 2019 NS| 29/29   | 36/22                 | 3                  | 1.27 ± 0.11/1.35    | TG Prednisone                          |
| Author          | Year | Disease | T/C | Included in the study Age (y) | Follow-up time (mo) | Course of disease (y) | Intervention measures |
|-----------------|------|---------|-----|------------------------------|--------------------|-----------------------|-----------------------|
| Luo Zhimou [44] | 2014 | NS      | 44/30 | 47.28 ± 3.17/47.28 ± 3.17    | 6                  | 3.4 ± 0.3             | TG, CTX              |
| Liu Shusheng [45]| 2014 | NS      | 50/50 | 1.5–14/2–13 34.3 ± 1.2       | 12                 | 2.1 ± 0.1             | TG, Prednisone        |
| Zhou Huiqing [46]| 2014 | NS      | 50/50 | 63.14 ± 9.07/62.32 ± 8.08    | 12                 | 6.2 ± 1.4/5.3 ± 1.8  | TG, Prednisone        |
| Lv Lihua [47]   | 2017 | NS      | 20/20 | 51.02 ± 5.84/51.06 ± 5.99    | 12                 | 3.2 ± 0.18/3.45 ± 1.27| TG, Prednisone        |
| Zhou Huiqing [46]| 2014 | NS      | 50/50 | 36.72 ± 5.41/37.12 ± 5.83    | 12                 | 3.6 ± 1.18/3.45 ± 1.27| TG, Prednisone        |
| Liu Yi [49]     | 2017 | RNS     | 42/42 | 36.72 ± 5.41/55.09 ± 3.48    | 3                  | —                     | LEFT + TG + Prednisone, CTX + prednisone |
| Zhang Baoguo [48]| 2017 | RNS     | 45/45 | 51.8 ± 12.2/53.45 ± 11.8     | 3                  | 3.17 ± 0.42/3.24 ± 1.06| TG, Prednisone acetate |
| Liu Qian [51]   | 2016 | RNS     | 30/30 | 36.9 ± 4.3/36.6 ± 4.2        | 6                  | 9.9 ± 3.1/9.5 ± 3.6  | TG + MMF, Routine + CTX + hormone |
| Niu Qing [52]   | 2017 | RNS     | 45/45 | 36.25 ± 3.21/36.45 ± 4.23    | 3                  | 8.2 ± 3.2/8.6 ± 3    | TG, CTX              |
| Guo Yong [53]   | 2018 | RNS     | 30/30 | 56.4 ± 11.2/57.1 ± 12.3      | 6                  | 3.7 ± 1.1/3.6 ± 1.2  | LEFT + TG, CTX + prednisone |
| Guo Xiaoping [54]| 2017 | RNS     | 85/85 | 35.19 ± 5.98/35.64 ± 6.07    | 4                  | 0.92 ± 0.22           | TG, MMF              |
| Wan Lin [55]    | 2015 | RNS     | 104/84| 51.8 ± 12.2/53.45 ± 11.8     | 3                  | 3.17 ± 0.42/3.24 ± 1.06| TG, Dexamethasone   |
| Jiao Linjuan [56]| 2020| RNS     | 53/53 | 36.19 ± 4.82/35.48 ± 4.5     | 12                 | 3.17 ± 0.42/3.24 ± 1.06| TG, Prednisone acetate |
| Chen Hui [57]   | 2015 | RNS     | 42/42 | 34.7 ± 6.2/35.1 ± 6.7        | 6                  | 0.82 ± 0.38/0.85 ± 0.4| TG, Routine + prednisone + MMF |
| Xu Hua [58]     | 2019 | RNS     | 31/31 | 35.97 ± 3.45                 | 6                  | 0.83 ± 0.11/0.83 ± 0.12| TG, MMF              |
| Wang Xiaoxue [59]| 2016| RNS     | 40/40 | 34.9 ± 6.5/35.6 ± 6.5        | 3                  | 3.5 ± 1.4/3.7 ± 1.3  | TG, Prednisone        |
| Wang Maohe [60] | 2014 | RNS     | 33/33 | 35.2 ± 2.7/34.6 ± 2.4        | 6                  | 3.5 ± 2.1/3.6 ± 1.9  | TG, Prednisone        |
| Xu Qingyun [61] | 2016 | RNS     | 40/40 | 39.3 ± 27.9/45.1 ± 36.9      | 2                  | 6.2 ± 5.9/5.8 ± 4.7  | TG, Glucocorticoid    |
| Fan Deyong [62] | 2014 | RNS     | 48/48 | 34.6 ± 7.4/35.2 ± 7.8        | 12                 | 3.2 ± 1.3/3.3 ± 1.3  | TG, Prednisone        |
| Xia Shufang [63]| 2017 | PNS     | 71/71 | 76.5 ± 3.2/72.6 ± 2.3        | 6                  | —                     | TG, Prednisone        |
| Wang Yongqing [64] | 2017 | PNS    | 17/17 | 51.12 ± 10.39                | 2                  | —                     | TG, Prednisone        |
| Li Han [65]     | 2017 | PNS     | 47/47 | 67.21 ± 1.79/67.45 ± 1.54    | 2                  | 0.83 ± 0.089/0.82 ± 0.094| TG, Prednisone        |
| Jiang Ganru [66]| 2014 | PNS     | 32/28 | 56.4 ± 12/55.4 ± 11.2        | 6                  | 2.13 ± 0.42/2.21 ± 0.38| LEFT + TG + Prednisone, CTX + prednisone |
| Bao Yu [67]     | 2013 | PNS     | 36/36 | 69.2 ± 8.06                  | >6                 | 0.74 ± 0.45           | TG, Prednisone        |
| Tian Junwei [68]| 2017 | PNS     | 140/140| 72.19 ± 9.45/71.34 ± 9.28   | 2                  | 2.92 ± 1.12/2.87 ± 1.15| TG, Prednisone + CTX |
| Lou Yuehang [69] | 2014 | PNS     | 19/22 | 60.6 ± 1.6/62.1 ± 5.8        | 12                 | —                     | TG + hormone, CTX + hormone |
| Zhu Junli [70]  | 2020 | PNS     | 44/44 | 71.96 ± 8.63                 | 3                  | 1.99 ± 0.96           | TG, Regular + benazepril |
| Zhang Qian [71] | 2019 | PNS     | 51/51 | 72.13 ± 8.76                 | 2                  | 2.47 ± 0.34/2.56 ± 0.37| TG, Regular + ramipril |
Table 1: Continued.

| Author          | Year | Disease | Included in the study | Follow-up time (mo) | Course of disease (y) | Intervention measures |
|-----------------|------|---------|-----------------------|---------------------|-----------------------|----------------------|
| Ning Xiaoli     | 2019 | PNS     | 44/44 52/36           | 3                   | 49.53 ± 7.11          | TG Hormone + LEFT    |
| Xu Xiaoqin      | 2020 | PNS     | 35/35 45/25           | 3                   | 43.21 ± 5.16/43.23 ± 5.15 | TG Prednisone        |
| Jiang Liangyan  | 2013 | PNS     | 41/41 47/34           | 9–12                | 69.11 ± 5.51          | TG Prednisone        |
| Chen Weiwei     | 2013 | PNS     | 32/32 44/20           | 12–18               | 67.7 ± 5.6            | TG Prednisone        |
| Chen Yuanshu    | 2018 | PNS     | 38/38 44/32           | 3                   | 48.87 ± 8.09/49.76 ± 8.21 | TG Prednisone acetate tablets + basic |
| Xu Junsan       | 2017 | PNS     | 48/46 49/45           | 12                  | 73.47 ± 4.31/73.81 ± 4.58 | TG CTX              |
| Li Weichao      | 2013 | PNS     | 15/15 17/13           | 6                   | 29.3 ± 3.6            | TG Prednisone        |
| Zhou Zhenzhong  | 2015 | PNS     | 20/20 23/17           | 4                   | 65.23 ± 8.23/64.84 ± 7.42 | TG Prednisone        |
| Li Xiaohong     | 2015 | PNS     | 40/40 47/33           | —                   | 53.5 ± 3.1/54 ± 3.3  | TG Prednisone + CTX  |
| Liu Jinping     | 2016 | PNS     | 38/38 42/34           | 12                  | 54.2 ± 3.7/54.1 ± 4.1 | TG Prednisone + CTX  |
| Yang Yonglin    | 2018 | MN      | 47/44 52/39           | 6                   | 66.62 ± 4.19/66.21 ± 3.98 | TG Benazepril       |
| Qu Wei          | 2016 | MN      | 28/28 20/36           | 12                  | 45.07 ± 11.93/38.82 ± 12.58 | TG Losartan potassium tablets |
| Mo Yaomei       | 2019 | MN      | 21/21 23/19           | 6                   | 50.2 ± 9.08/49.8 ± 10.16 | TG Basics + MMF + prednisone |
| Chen Ye         | 2018 | IgAN    | 25/24 33/16           | 3                   | 9.3 ± 1.2/9.1 ± 1.1   | Basic + prednisone + TG |

Note. T represents the experimental group and C represents the control group. M means male and F means female. "—" indicates that it is not reported or does not need to be reported. Drug dosage: glucocorticoid, 1 mg/(kg·d); (methyl)prednisone, 1–1.5 mg/kg·d; TG, 1–1.5 mg/kg·d; CTX, 8 mg/(kg·d); dipyridamole, 50 mg/time. Other drug dosages are not indicated in the literature.
2.5. Data Analysis. Statistical analysis was carried out using RevMan 5.3, provided by Cochrane Collaboration Network, and Stata 12.0 software. The second classification variable uses the odds ratio (OR) as the effect analysis statistic. The weighted mean difference (WMD) was used as the effect analysis statistic for the measurement data. All effects provide 95% confidence interval. The heterogeneity among the included results was analyzed by chi-square test (test level $\alpha=0.05$). At the same time, the heterogeneity was quantitatively judged by $I^2$. When $P \geq 0.05$ and $I^2 \leq 50\%$, it is suggested that there is no obvious statistical heterogeneity, and the fixed effect model is used. When $P < 0.05$ and $I^2 > 50\%$, it is suggested that there is statistical heterogeneity, and meta-regression is used to analyze the source of heterogeneity. If there is no obvious clinical heterogeneity, the random effect model is selected. According to the different intervention measures between the experimental group and the control group, Egger's linear regression method was used to test the existence of publication bias. The quality of each independent study was evaluated by using the Jadad scale, which is commonly used in the review of Cochrane system. Finally, GRADEpro software was used to evaluate the final evidence quality. A 2-sided $P < 0.05$ was considered statistically significant for all analyses.

3. Result

3.1. An Overview of the Inclusion of Literature. According to the retrieval strategy, a total of 806 related studies were found. According to the inclusion and exclusion criteria and one-by-one screening, we finally included 75 articles (Figure 1), with a total of 6418 subjects. The follow-up period was 1 month at least and 2 years at most. In all studies, the baseline characteristics of the experimental group and the control group were similar. Among the subjects, there were 2789 patients with NS, accounting for 43.46%. There were 1346 patients with RNS, accounting for 20.97%. There were 1879 patients with PNS, accounting for 29.28%. The rest were 291 patients with membranous nephropathy (MN), 64 patients with diabetic nephropathy, and 49 patients with IgA nephropathy. All the subjects were treated with basic routine treatment. The experimental group was treated with TGt alone or in combination with other drugs. The intervention measures in the control group were prednisone, prednisone acetate, methyl prednisone, Methylprednisolone (MP), cyclophosphamide (CTX) (Table 1). According to the literature description, all trials are randomized controlled trials, but only 49 (62.8%) studies describe random sequence generation methods in detail. The quality results included in the overall literature are shown in Figure 2.

3.2. Clinical Effect

3.2.1. Total Clinical Effective Rate. A total of 66 studies included the total clinical effective rate of TGt in the treatment of CKD. A total of 5348 patients were involved. These studies were combined and analyzed according to the type of disease, the mode of medication, the course of treatment, and the age of the patients. The weighted combination results (Table 2, Figure 3) showed that the data of the 66 studies were homogeneous ($I^2 = 0.0\%$, $P > 0.05$). The combined effect OR was modeled by fixed effect, the OR = 3.415, and the 95% confidence interval was (2.933, 3.975). For the test of comprehensive OR, the difference was statistically significant ($z=15.84$, $P < 0.05$). Therefore, we think that TGt is more effective than other drugs in the treatment of chronic kidney disease. Publication bias was detected by Egger’s linear regression ($P<0.05$). The results of metaregression analysis showed that different types of diseases, mode of medication, courses of treatment, and age of patients had influence on the combined effect ($P < 0.05$). Although the pathogenesis of each disease is crossed, it is also different. For example, the treatment of diabetic nephropathy with Tripterygium wilfordii polyglycosides may be related to increasing the activity of catalase (CAT) in serum and glutathione peroxidase (GSH-Px) in kidney tissue,
reducing the content of malondialdehyde (MDA) in kidney tissue and the level of superoxide anion (O2 -) in serum, inhibiting oxidative stress, and enhancing the ability of antioxidation [86, 87]. The four aspects of appetite, hormone level, inflammatory state, and metabolic function of patients with chronic kidney disease influence and interact with each other [88]. Therefore, different body factors will have a certain impact on the efficacy of medication.

3.2.2. Recurrence Rate. A total of 7 studies included the recurrence of the disease in the treatment of CKD. A total of 536 patients were enrolled. Among them, 65 patients relapsed. The weighted merging results (Figure 4) showed that the data of the 7 studies were homogeneous ($I^2 = 0.0$, $P > 0.05$). The fixed effect model was used, the combined OR = 0.194, and the 95% confidence interval was (0.097, 0.388). For the test of comprehensive OR, $z = 4.64$, $P < 0.05$. There are statistical differences. In patients treated with TGt, the recurrence rate can be reduced compared with the control group. There was no publication bias in the Egger linear regression test ($P > 0.05$).

3.2.3. 24-Hour Urinary Protein. A total of 54 studies included 24-hour urinary protein data, with a total of 4495 patients. The combination and subgroup analysis of 24 h urinary protein volume were performed according to disease type, medication method, course of treatment, and patient age. The results of the meta-analysis showed that the results of 8 studies were not statistically significant. The results of weighted combination (Table 3, Figure 5) showed that the data of the 54 studies had great heterogeneity ($I^2 = 99.00$, $P < 0.05$). The random effect model was used in the combined effect. WMD = -0.503 and the 95% confidence interval was (-0.526, -0.481). For the comprehensive WMD test, $z = 43.52$, $P < 0.05$. The difference is statistically significant. Therefore, it can be considered that the ability of TGt to reduce 24-hour urinary protein is higher than that of other therapeutic agents. Publication bias was detected by Egger’s linear regression ($P < 0.05$). The results of metaregression analysis showed that different types of diseases, mode of medication, courses of treatment, and age of patients had no effect on the combined effect ($P > 0.05$). However, subgroup analysis showed that TGt was more effective in the treatment of PNS than other disease types. The effect of reducing 24-hour urinary protein in the elderly (>66 years old) was better than that in the young patients treated with TGt. The effect of combined treatment was better than that of TGt alone in reducing 24-hour urinary protein.

3.2.4. Serum Creatinine (Scr). A total of 31 studies included data on Scr for a total of 2580 patients. The Scr data were combined and subgroup-analyzed according to the type of disease, the mode of medication, the course of treatment, and the age of the patients. The results of weighted combination (Table 4) show that the data of the 31 studies have great heterogeneity ($I^2 = 94.33$, $P < 0.05$). The random effect model was used in the combined effect. WMD = -9.636, and the 95% confidence interval was (-12.039, -7.233). For the comprehensive WMD test, $z = 7.86$, $P < 0.05$. The difference is statistically significant. Therefore, it can be considered that TGt has higher ability to reduce Scr than other therapeutic agents. Publication bias was detected by Egger’s linear regression ($P < 0.05$). The results of metaregression analysis showed that different types of diseases and courses of treatment

### Table 2: Results of meta-analysis of clinical efficacy.

| Subgroup analysis | No. of studies | Weighted combination OR [95% conf. interval] | Heterogeneity | Egger’s bias | Metaregression | $I^2$ | $P$ value |
|-------------------|---------------|---------------------------------|---------------|-------------|----------------|------|----------|
| **Disease type**  |               |                                 |               |             |                |      |          |
| NS                | 31            | 3.337 (2.649, 4.203)             | $P < 0.05$    | 22.7%       | $P > 0.05$     | 5.2  | $P > 0.05$|
| RNS               | 14            | 4.141 (3.037, 5.646)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| PNS               | 17            | 2.822 (2.109, 3.776)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| MN                | 3             | 4.761 (2.182, 10.385)            | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| IgAN              | 1             | 4.000 (1.129, 14.175)            | $P < 0.05$    | —           | —              | —    | —        |
| **Mode of medication** |       |                                 |               |             |                |      |          |
| Single drug       | 6             | 4.037 (2.241, 7.272)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| Combined use of drugs | 60     | 3.373 (2.882, 3.947)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| **Course of treatment** |     |                                 |               |             |                |      |          |
| <6 months         | 20            | 3.705 (2.854, 4.809)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| ≥6 months         | 28            | 3.318 (2.622, 4.198)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| ≥12 months        | 17            | 3.104 (2.272, 4.240)             | $P < 0.05$    | 26.6%       | $P > 0.05$     | 5.2  | $P > 0.05$|
| **Age of the patient (year)** |   |                                 |               |             |                |      |          |
| 0–18              | 2             | 4.981 (2.006, 12.365)            | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | —        |
| 19–65             | 45            | 3.591 (2.974, 4.337)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| >66               | 18            | 3.454 (2.606, 4.577)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| Not reported      | 1             | 0.167 (0.034, 0.805)             | $P < 0.05$    | —           | —              | —    | —        |
| **Total**         | 66            | 3.415 (2.933, 3.975)             | $P < 0.05$    | 0.0%        | $P > 0.05$     | 5.2  | $P > 0.05$|
| Study ID | OR (95% CI) | Weight (%) |
|----------|-------------|-------------|
| NY       |             |             |
| TianWei (2014) | 5.09 (0.58, 52.20) | 0.18 |
| Li Ping (2018) | 8.83 (1.01, 76.96) | 0.40 |
| LuoMing-fua (2018) | 2.54 (0.72, 9.00) | 1.68 |
| Xu Qin (2018) | 5.92 (1.51, 23.22) | 2.14 |
| Guo Peng (2016) | 2.25 (0.62, 8.18) | 1.65 |
| Song Bo (2018) | 4.81 (1.09, 20.69) | 1.09 |
| Yi Lian (2018) | 7.21 (2.78, 21.24) | 0.98 |
| Chang Xue-jing (2013) | 4.64 (1.18, 18.16) | 1.15 |
| Dong Xiu-xue (2017) | 4.81 (0.95, 24.75) | 0.80 |
| Zhang Li-yun (2019) | 4.62 (1.32, 15.79) | 1.20 |
| Deng Ming-fua (2014) | 7.76 (0.85, 70.75) | 0.58 |
| Zhou Zhao-xi (2018) | 4.00 (1.02, 15.69) | 1.20 |
| Xu Hu-jun (2015) | 4.64 (1.02, 21.09) | 0.85 |
| Zhang Pei-qiang (2019) | 5.41 (1.02, 28.79) | 0.70 |
| Yan Long-shi (2014) | 7.00 (1.38, 35.48) | 0.69 |
| Chen Fang (2012) | 5.92 (1.81, 19.25) | 1.36 |
| Guo Xiao-fang (2019) | 3.32 (1.06, 10.37) | 1.78 |
| Ni Ying (2017) | 3.02 (1.45, 6.19) | 4.03 |
| Zhou Jing-fang (2010) | 3.90 (1.99, 50.54) | 1.53 |
| Xue Zai-yong (2019) | 2.28 (1.05, 5.06) | 1.03 |
| Liu Fan (2017) | 4.22 (1.12, 15.95) | 1.28 |
| Zhang Zhi-fang (2015) | 0.21 (0.05, 0.64) | 5.25 |
| Liu Li (2019) | 8.91 (1.62, 72.61) | 0.99 |
| Liu Shao-sheng (2014) | 6.09 (1.63, 22.82) | 1.12 |
| Zhou Hui-qing (2014) | 0.07 (0.05, 0.81) | 4.96 |
| Li Li (2017) | 4.75 (0.84, 26.91) | 0.41 |
| Jiang Xue-hu (2014) | 5.77 (0.63, 52.61) | 0.63 |
| Jiang Chao-xia (2016) | 9.47 (1.06, 84.37) | 0.37 |
| Liao Wen (2016) | 5.28 (2.86, 9.77) | 2.21 |
| Wang Dan-guo (2020) | 3.80 (0.98, 14.90) | 1.29 |
| Liu Qin (2017) | 3.75 (1.26, 11.63) | 1.70 |
| Subtotal (I-squared = 22.7%, p = 0.130) | 3.54 (2.04, 6.15) | 44.23 |
| BNS |             |             |
| Ju Li (2020) | 3.32 (1.02, 9.88) | 1.85 |
| Chen (2015) | 3.11 (1.21, 7.87) | 2.63 |
| Xu Hua (2019) | 5.13 (1.27, 20.81) | 1.00 |
| Wang Xiao (2010) | 6.09 (1.79, 20.13) | 1.24 |
| Wang Xiao-lin (2014) | 6.50 (1.64, 25.76) | 0.94 |
| Xu Qing-yun (2016) | 3.00 (0.85, 10.54) | 1.55 |
| Niu qing (2017) | 4.16 (1.24, 14.09) | 1.47 |
| Liao Qin (2016) | 5.70 (1.24, 23.10) | 1.49 |
| Jiang Xin (2014) | 7.05 (0.62, 72.56) | 1.96 |
| Guo Yong (2018) | 7.88 (1.36, 41.69) | 1.05 |
| Li Yi (2017) | 5.28 (1.35, 20.09) | 1.11 |
| Zhang Ting-ting (2017) | 4.09 (1.32, 14.04) | 1.67 |
| Guo Xiao-ping (2017) | 3.79 (1.43, 10.04) | 2.41 |
| Fan De-yang (2014) | 4.72 (1.57, 14.15) | 1.67 |
| Guo Xiao-ping (2017) | 3.79 (1.43, 10.04) | 2.41 |
| Subtotal (I-squared = 0.0%, p = 0.194) | 4.11 (3.06, 5.52) | 24.23 |
| PSNS |             |             |
| Xu Xu-fang (2017) | 5.01 (1.04, 24.07) | 0.90 |
| Wang Xiao-qing (2014) | 8.73 (0.82, 82.96) | 0.33 |
| Chen Yan-shu (2018) | 2.64 (0.70, 9.53) | 2.87 |
| Li Wei-chao (2013) | 5.69 (0.94, 34.46) | 0.55 |
| Xu Xiao-qun (2020) | 5.71 (1.13, 23.75) | 0.77 |
| Rao Yi (2013) | 2.68 (0.85, 8.12) | 1.25 |
| Tianyuan-xu (2017) | 4.68 (1.50, 14.31) | 7.36 |
| ZhuJian-k (2020) | 3.33 (0.97, 11.45) | 1.55 |
| ZhangQuan (2019) | 2.84 (0.99, 8.13) | 2.25 |
| Jiangliang-xin (2013) | 0.73 (0.15, 3.49) | 1.91 |
| ChenWen-xu (2013) | 3.24 (0.98, 10.60) | 1.61 |
| Zhen-xian (2017) | 5.48 (1.10, 25.90) | 1.54 |
| ZhouZhen-sheng (2015) | 4.75 (0.48, 49.93) | 0.41 |
| LinXiao-fang (2014) | 1.14 (0.26, 5.92) | 0.96 |
| LiXiao-fang (2015) | 1.20 (0.32, 4.59) | 1.81 |
| Liu Ju-ying (2015) | 1.37 (0.26, 6.58) | 1.39 |
| Subtotal (I-squared = 0.0%, p = 0.870) | 2.74 (2.02, 3.72) | 27.06 |
| IgAN |             |             |
| Chen Ye (2018) | 4.09 (1.13, 14.17) | 1.26 |
| Subtotal (I-squared = 0.0%, p = 0.194) | 4.09 (1.13, 14.17) | 1.26 |
| MN |             |             |
| Yang Ting-hui (2018) | 4.01 (1.10, 14.59) | 1.16 |
| Guo Wei (2014) | 4.34 (1.48, 12.54) | 0.66 |
| Mo Xiao-mei (2019) | 3.85 (1.07, 13.05) | 0.64 |
| Subtotal (I-squared = 0.0%, p = 0.194) | 4.76 (2.18, 10.39) | 3.22 |
| Overall (I-squared = 0.0%, p = 0.708) | 3.41 (2.05, 5.98) | 100.00 |

Figure 3: Comparison of clinical efficacy of different types of diseases between the experimental group and the control group.
### Table 3: Results of meta-analysis of 24-hour urinary protein.

| Subgroup analysis                        | No. of studies | Weighted combination [95% conf. interval] | P value | Heterogeneity | Egger's bias | Metaregression |
|------------------------------------------|----------------|-------------------------------------------|---------|---------------|--------------|---------------|
| **Disease type**                         |                |                                           |         |               |              |               |
| NS                                       | 25             | −0.690 (−0.829, −0.551)                   | P < 0.05| 94.2%         | P < 0.05     | P > 0.05      |
| RNS                                      | 12             | −0.500 (−0.629, −0.370)                   | P < 0.05| 77.7%         | P < 0.05     | P > 0.05      |
| PNS                                      | 13             | −6.092 (−7.171, −5.014)                   | P < 0.05| 99.8%         | P < 0.05     | P > 0.05      |
| MN                                       | 3              | −0.290 (−0.533, −0.048)                   | P < 0.05| 59.2%         | P > 0.05     | P > 0.05      |
| IgAN                                     | 1              | −1.400 (−2.615, −0.185)                   | P < 0.05| —             | —            | —             |
| **Mode of medication**                   |                |                                           |         |               |              |               |
| Single drug                              | 5              | −0.531 (−0.612, −0.451)                   | P < 0.05| 85%           | P < 0.05     | P > 0.05      |
| Combined use of drugs                    | 49             | −0.501 (−0.525, −0.477)                   | P < 0.05| 99.1%         | P < 0.05     | P < 0.05      |
| **Course of treatment**                  |                |                                           |         |               |              |               |
| <6 months                                | 17             | −0.531 (−0.563, −0.498)                   | P < 0.05| 99.7%         | P < 0.05     | P < 0.05      |
| ≥6 months                                | 22             | −0.506 (−0.553, −0.459)                   | P < 0.05| 94.9%         | P < 0.05     | P < 0.05      |
| ≥12 months                               | 14             | −0.442 (−0.485, −0.399)                   | P < 0.05| 74.1%         | P < 0.05     | P < 0.05      |
| Not reported                             | 1              | −1.720 (−2.140, −1.300)                   | P < 0.05| —             | —            | —             |
| **Age of the patient (year)**            |                |                                           |         |               |              |               |
| 0–18                                     | 1              | −0.657 (−0.766, −0.547)                   | P < 0.05| —             | —            | —             |
| 19–65                                    | 39             | −0.606 (−0.824, −0.388)                   | P < 0.05| 93.4%         | P < 0.05     | P > 0.05      |
| >66                                      | 14             | −4.871 (−5.827, −3.915)                   | P < 0.05| 99.7%         | P < 0.05     | —             |
| **Total**                                | 54             | −0.503 (−0.526, −0.481)                   | P < 0.05| 99.0%         | P < 0.05     | P < 0.05      |

*Figure 4: Comparison of recurrence between the experimental group and control group.*
| Study ID | Weight (%) | WMD (95% CI) |
|----------|------------|--------------|
| NS       |            |              |
| Tan Wei (2014) | 1 | -0.58 (-0.91, -0.25) | 1.92 |
| Luo Ming-hua (2018) | 1 | -0.26 (-0.43, -0.09) | 1.97 |
| Guo Peng (2016) | 1 | -0.70 (-0.83, -0.57) | 1.98 |
| Ye Lan (2015) | 1 | -0.70 (-1.21, -0.19) | 1.83 |
| Chang Xue-jing (2013) | 1 | -0.70 (-1.18, -0.22) | 1.85 |
| Deng Shun-tian (2017) | 1 | -1.91 (-2.19, -1.63) | 1.94 |
| Zhang Li-yang (2019) | 1 | -0.51 (-0.66, -0.36) | 1.98 |
| Deng Ming-hua (2014) | 1 | -0.50 (-0.56, -0.44) | 1.99 |
| Zhou Zhao-xie (2018) | 1 | -0.38 (-0.45, -0.31) | 1.99 |
| Niu He-jun (2015) | 1 | -0.45 (-0.61, -0.29) | 1.97 |
| Zhang Pei-qiang (2019) | 1 | -2.65 (-3.04, -2.26) | 1.90 |
| Gao Xiao-feng (2019) | 1 | -0.68 (-0.88, -0.48) | 1.96 |
| Ni Ying (2017) | 1 | -0.66 (-0.82, -0.50) | 1.97 |
| Zhao Jing-Yu (2018) | 1 | -0.67 (-0.91, -0.43) | 1.95 |
| Xiong Xin-rong (2019) | 1 | -0.50 (-0.63, -0.37) | 1.98 |
| Liu Fan (2017) | 1 | -0.51 (-0.83, -0.19) | 1.93 |
| Zhang Zhi-yang (2015) | 1 | 0.70 (0.45, 0.95) | 1.95 |
| Luo Zhi-mou (2014) | 1 | -0.70 (-1.74, 0.34) | 1.47 |
| Liu Qian (2011) | 1 | -0.70 (-0.92, -0.48) | 1.96 |
| Zhang Bao-guo (2019) | 1 | -0.54 (-0.67, -0.41) | 1.98 |
| Jiang Xiao-li (2014) | 1 | -0.60 (-0.74, -0.46) | 1.98 |
| Liao Wen (2016) | 1 | -1.35 (-1.71, -0.99) | 1.91 |
| Wang Dan-guo (2020) | 1 | -0.70 (-0.82, -0.58) | 1.98 |
| Jiang Chun-Xia (2016) | 1 | -0.07 (-0.19, 0.05) | 0.97 |
| Subtotal (I-squared = 94.2%, p = 0.000) | 1 | -1.72 (-2.14, -1.30) | 1.88 |
| RNS      |            |              |
| Jiao Linjuan (2020) | 1 | -0.43 (-0.58, -0.28) | 1.98 |
| Chen hui (2015) | 1 | -0.50 (-0.79, -0.21) | 1.94 |
| Wang Xiao-xue (2016) | 1 | -0.46 (-0.64, -0.28) | 1.97 |
| Wang Mao-he (2014) | 1 | -0.60 (-0.82, -0.38) | 1.96 |
| Xu Qing-yun (2016) | 1 | -0.09 (-0.25, 0.07) | 0.97 |
| Niu qing (2017) | 1 | -1.38 (-1.82, -0.94) | 1.87 |
| Liu Qian (2016) | 1 | -0.49 (-0.73, -0.25) | 1.95 |
| Guo Yong (2018) | 1 | -0.27 (-0.48, -0.06) | 1.96 |
| Liu Yi (2017) | 1 | -0.58 (-0.77, -0.39) | 1.97 |
| Guo Xiao-ping (2017) | 1 | -0.60 (-0.73, -0.47) | 1.98 |
| Fan De-yong (2014) | 1 | -0.49 (-0.66, -0.32) | 1.97 |
| Wan Lin (2015) | 1 | -2.80 (-3.68, 0.48) | 0.44 |
| Subtotal (I-squared = 77.7%, p = 0.000) | 1 | -0.50 (-0.63, -0.37) | 21.97 |
| PNS      |            |              |
| Ning Xiao-li (2019) | 1 | -0.61 (-0.75, -0.47) | 1.98 |
| Chen Yuan-shu (2018) | 1 | -1.74 (-2.16, -1.32) | 1.88 |
| Xu Xiao-qin (2020) | 1 | -0.45 (-0.51, -0.39) | 1.99 |
| Tian Jun-wei (2017) | 1 | -0.84 (-1.10, -0.58) | 1.95 |
| Zhubun-li (2020) | 1 | -1.12 (-1.45, -0.79) | 1.92 |
| Zhubuqian (2019) | 1 | -1.22 (-1.55, -0.89) | 1.92 |
| Jiang Lang-yan (2013) | 1 | -0.09 (-0.26, 0.08) | 1.97 |
| Chen Wei-wei (2013) | 1 | -0.88 (-1.27, -0.49) | 1.90 |
| Xu Xian-san (2017) | 1 | -0.21 (-0.36, -0.06) | 1.98 |
| Zhou Zhe-zhong (2015) | 1 | -0.32 (-0.52, -0.12) | 1.97 |
| Li Han (2017) | 1 | -131.68 (-135.34, -128.02) | 0.37 |
| Lou Xue-hang (2014) | 1 | -0.10 (-0.22, 0.02) | 1.93 |
| Li Xiao-hong (2015) | 1 | -0.10 (-0.28, 0.08) | 1.97 |
| Subtotal (I-squared = 99.8%, p = 0.000) | 1 | -6.09 (-7.17, -5.01) | 23.72 |
| MN       |            |              |
| Yang Yong-lin (2018) | 1 | -0.46 (-0.86, -0.06) | 1.89 |
| Qu Yi (2016) | 1 | -0.14 (-0.45, 0.17) | 1.93 |
| Mo Yao-mei (2019) | 1 | -1.88 (-3.39, -0.17) | 1.01 |
| Subtotal (I-squared = 59.2%, p = 0.086) | 1 | 0.40 (-0.87, 0.08) | 4.84 |
| IgAN     |            |              |
| Chen Ye (2018) | 1 | -1.40 (-2.62, -0.18) | 1.34 |
| Subtotal (I-squared = 99.0%, p = 0.000) | 1 | -1.15 (-1.40, -0.90) | 100.00 |

Figure 5: Comparison of 24-hour urinary protein in patients with different types of diseases between the experimental group and the control group.
had influence on the combined effect ($P < 0.05$). The results of subgroup analysis showed that TGt had no statistical significance in reducing Scr in patients with MN and DN compared with the control group (Figure 6). As for the course of treatment, when it is greater than or equal to 12 months, there is no statistical significance compared with the control group.

### 3.2.5. Blood Urea Nitrogen (BUN)

A total of 24 studies included BUN data for a total of 2057 patients. The data of BUN were combined and analyzed according to the type of disease, the mode of medication, the course of treatment, and the age of the patients. The results of weighted combination (Table 5, Figure 7) showed that the data of the 24 studies had great heterogeneity ($I^2 = 91.3\%$, $P < 0.05$). The random effect model was used in the combined effect. WMD = 4.557, and the 95% confidence interval was (3.523, 5.529). For the comprehensive WMD test, $z = 8.64$, $P < 0.05$. There are statistical differences. That is, the ability of TGt to increase serum albumin level is higher than that of other therapeutic agents. There was no publication bias detected by Egger’s linear regression ($P > 0.05$). The results of metaregression analysis showed that different types of diseases, mode of medication, courses of treatment, and age of patients had influence on the combined effect ($P < 0.05$).

### 3.3. Safety Evaluation

#### 3.3.1. Total Incidence of Adverse Reactions

A total of 36 studies reported the following 12 adverse reactions: gastrointestinal adverse reactions (30), leukopenia (18), dizziness and headache (9), thrombocytopenia (2), liver injury (11), respiratory tract infection (12), elevated blood glucose (4), menstrual disorder (3), elevated blood pressure (2), elevated glutamic pyruvic transaminase (4), other adverse reactions (palpitation, insomnia, hair loss, etc.). A total of 2614 patients were included in the study, and a total of 482 cases of adverse reactions occurred. These studies were combined and analyzed according to the type of disease, the mode of medication, the course of treatment, and the age of the patients. The weighted merging results (Table 7, Figure 9) show that the data of the 36 studies are homogeneous ($I^2 = 48\%$, $P < 0.05$). Using the fixed effect model, the combined OR = 0.546, and the 95% confidence interval was (0.443, 0.673). For the comprehensive OR test, $z = 5.68$, $P < 0.05$. There are statistical differences. Patients treated with TGt were less likely to have adverse events than those treated with other drugs. Publication bias was detected by Egger’s linear regression ($P < 0.05$). The results of metaregression analysis showed that the course of treatment and the age of the patients had influence on the combined effect ($P < 0.05$). The results of subgroup analysis showed that TGt combined with other drugs could reduce the incidence of adverse reaction events, especially for older patients.
| Study ID | WMD (95% CI) | Weight (%) |
|---------|--------------|------------|
| Zhang Bao-guo (2019) | -3.94 (-13.61, 5.73) | 2.64 |
| Ning Xiao-li (2019) | -0.36 (-0.94, 0.22) | 4.59 |
| Deng Ming-hua (2014) | -31.70 (-38.96, -24.44) | 3.24 |
| Niu He-jun (2015) | -12.30 (-19.04, -5.56) | 3.38 |
| Gao Xiao-feng (2019) | -5.61 (-10.00, -1.22) | 3.99 |
| Ni Ying (2017) | -5.36 (-10.55, -0.17) | 3.79 |
| Zhao Jing-Yu (2018) | -11.16 (-15.44, -6.88) | 4.02 |
| Wu Wen-sheng (2019) | -27.64 (-42.60, -12.68) | 1.65 |
| Xiong Xin-rong (2019) | -12.30 (-17.02, -7.58) | 3.91 |
| Liu Fan (2017) | -25.85 (-42.24, -9.46) | 1.46 |
| Zhang Zhi-fang (2015) | 0.34 (-0.30, 0.98) | 4.59 |
| Zhang Bao-guo (2019) | -8.13 (-15.32, -0.94) | 3.26 |
| Jiang Xiao-li (2014) | 2.40 (-5.54, 10.34) | 3.06 |
| Jiang Chun-xia (2016) | -66.32 (-76.69, -55.95) | 2.48 |
| Liu Qian (2017) | -10.69 (-13.57, -7.81) | 4.32 |
| Subtotal (I-squared = 96.2%, p = 0.000) | -11.76 (-14.97, -8.56) | 50.37 |
| Chen hui (2015) | -7.28 (-13.90, -0.66) | 3.41 |
| Liu Qian (2016) | -7.43 (-14.55, -0.31) | 3.28 |
| Guo Yong (2018) | -12.28 (-19.80, -4.76) | 3.17 |
| Liu Yi (2017) | -3.94 (-9.72, 1.84) | 3.64 |
| Guo Xiao-ping (2017) | -7.72 (-11.72, -3.72) | 4.08 |
| Fan De-yong (2014) | -2.58 (-7.82, 2.66) | 3.78 |
| Subtotal (I-squared = 11.5%, p = 0.342) | -6.48 (-8.96, -4.00) | 21.35 |
| Chen Yuan-shu (2018) | 10.74 (-17.46, 38.94) | 0.63 |
| Tianjun-wei (2017) | -15.62 (-20.56, -10.68) | 3.85 |
| Zhujun-li (2020) | -11.13 (-15.42, -6.84) | 4.01 |
| Zhang Qian (2019) | -13.13 (-18.10, -8.16) | 3.85 |
| Chen Wei-wei (2013) | -1.89 (-18.41, 14.63) | 1.45 |
| Zhou Zhen-zhong (2015) | -5.92 (-22.81, 10.97) | 1.41 |
| Li Han (2017) | -11.98 (-15.72, -8.24) | 4.14 |
| Subtotal (I-squared = 36.2%, p = 0.139) | -11.10 (-13.97, -8.24) | 22.79 |
| Qu Wei (2016) | 14.25 (4.61, 23.89) | 2.64 |
| Mo Yao-mei (2019) | -9.48 (-18.32, -0.64) | 2.84 |
| Subtotal (I-squared = 92.1%, p = 0.000) | 2.30 (-20.95, 25.56) | 5.48 |
| Overall (I-squared = 94.3%, p = 0.000) | -9.64 (-12.04, -7.23) | 100.00 |

*Figure 6: Comparison of serum creatinine level of drug intervention between the experimental group and control group with different types of diseases.*
Table 5: Meta-analysis of reducing blood urea nitrogen level in the experimental group and control group.

| Subgroup analysis                  | No. of studies | Weighted combination WMD [95% conf. interval] | P value | Heterogeneity I² | P value | Egger’s bias P value | Metaregression P value |
|-----------------------------------|----------------|-----------------------------------------------|---------|------------------|---------|----------------------|-----------------------|
| **Disease type**                  |                |                                               |         |                  |         |                      |                       |
| NS                                | 12             | −0.536 (−0.832, −0.241)                       | P < 0.05| 69.1%            | P < 0.05| 0.416                |                       |
| RNS                               | 6              | −0.000 (−0.847, 0.846)                        | P > 0.05| 97%              | P < 0.05| 0.252                | P > 0.05              |
| PNS                               | 4              | −0.114 (−1.360, 1.132)                        | P > 0.05| 95%              | P < 0.05| 0.061                |                       |
| MN                                | 2              | −0.555 (−1.204, 0.095)                        | P > 0.05| 0%               | P > 0.05| 0.673                |                       |
| **Mode of medication**            |                |                                               |         |                  |         |                      |                       |
| Single drug                       | 1              | −0.93 (−1.536, 0.324)                         | P > 0.05| 84.3%            | P < 0.05| —                   | P > 0.05              |
| Combined use of drugs             | 23             | −0.298 (−0.644, 0.049)                        | P > 0.05| 91.6%            | P < 0.05| P > 0.05             |                       |
| **Course of treatment**           |                |                                               |         |                  |         |                      |                       |
| <6 months                         | 6              | −0.38 (−1.07, 0.31)                           | P > 0.05| 93.2%            | P < 0.05| P > 0.05             |                       |
| ≥6 months                         | 14             | −0.235 (−0.693, 0.223)                        | P > 0.05| 90.6%            | P < 0.05| P > 0.05             |                       |
| ≥12 months                        | 4              | −0.484 (−0.859, −0.108)                       | P < 0.05| 27.3%            | P < 0.05| P > 0.05             |                       |
| **Age of the patient (year)**     |                |                                               |         |                  |         |                      |                       |
| 19–65                             | 17             | −0.325 (−0.722, 0.071)                        | P > 0.05| 92.2%            | P < 0.05| P > 0.05             |                       |
| >66                               | 7              | −0.310 (−1.046, 0.426)                        | P > 0.05| 89.9%            | P < 0.05| P > 0.05             |                       |
| **Total**                         | 24             | −0.326 (−0.661, 0.009)                        | P > 0.05| 91.3%            | P < 0.05| P > 0.05             |                       |

Study ID

| Study ID | WMD (95% CI) | Weight (%) |
|----------|--------------|------------|
| TanWei (2014) | −0.21 (−1.25, 0.83) | 3.52 |
| LuoMing-hua (2018) | −11.12 (−16.09, −6.15) | 0.42 |
| Niu He-jun (2015) | −0.70 (−1.52, 0.12) | 4.04 |
| Gao Xiao-feng (2019) | −0.08 (−0.51, 0.35) | 4.88 |
| Ni Ying (2017) | −0.18 (−0.53, 0.17) | 5.02 |
| Zhao Jing-Yu (2018) | −0.59 (−0.86, −0.32) | 5.13 |
| Wu Wen-sheng (2019) | −0.77 (−1.38, −0.16) | 4.52 |
| Xiong Xin-rong (2019) | −0.40 (−0.97, 0.17) | 4.60 |
| Liu Fan (2017) | −0.76 (−1.25, −0.27) | 4.77 |
| Zhang Zhi-fang (2015) | 2.09 (−0.25, 4.43) | 1.48 |
| Zhang Bao-guo (2019) | −0.93 (−1.54, −0.32) | 4.52 |
| Liu Qian (2017) | −0.77 (−1.17, −0.37) | 4.94 |
| Shi Qing-wan (2018) | (Excluded) | 0.00 |
| Subtotal (I-squared = 69.1%, p = 0.000) | −0.54 (−0.83, −0.24) | 47.83 |
| RNS |              |            |
| Chen hui (2015) | 2.62 (2.03, 3.21) | 4.56 |
| Liu Qian (2016) | −0.16 (−0.38, 0.06) | 5.19 |
| Guo Yong (2018) | −0.87 (−1.57, −0.17) | 4.32 |
| Liu Yi (2017) | −0.21 (−0.83, 0.41) | 4.49 |
| Guo Xiao-ping (2017) | −1.12 (−1.29, −0.95) | 5.23 |
| Fan De-yong (2014) | −0.19 (−0.76, 0.38) | 4.60 |
| Subtotal (I-squared = 97.0%, p = 0.000) | −0.00 (−0.85, 0.85) | 28.40 |
| PNS |              |            |
| ChenYuan-shu (2018) | −0.91 (−1.47, −0.35) | 4.63 |
| Zhujun-li (2020) | −1.01 (−1.51, −0.51) | 4.76 |
| ZhangQian (2019) | −0.95 (−1.40, −0.50) | 4.85 |
| LiHan (2017) | 2.62 (1.76, 3.48) | 3.93 |
| Subtotal (I-squared = 95.0%, p = 0.000) | −0.11 (−1.36, 1.13) | 18.17 |
| MN |              |            |
| Yang Yong-lin (2018) | −0.59 (−1.26, 0.08) | 4.38 |
| Mo Yao-mei (2019) | 0.00 (−2.65, 2.65) | 1.23 |
| Subtotal (I-squared = 0.0%, p = 0.673) | −0.55 (−1.20, 0.10) | 5.60 |
| Overall (I-squared = 91.3%, p = 0.000) | −0.33 (−0.66, 0.01) | 100.00 |

Figure 7: Comparison of drug intervention on blood urea nitrogen between the experimental group and control group of different types of diseases.
3.3.2. Gastrointestinal Adverse Reactions. A total of 2190 cases of gastrointestinal adverse reactions (nausea, vomiting, etc.) occurred in patients treated with TGt. The data were combined, and their subgroups were analyzed according to the type of disease, the mode of medication, the course of treatment, and the age of the patients. The weighted merging results (Table 8, Figure 10) show that the data of the 30 studies are homogeneous ($I^2 = 0.0\%$, $P > 0.05$). Using the fixed effect model, the combined OR $= 0.711$, and the 95% confidence interval is (0.517, 0.980). For the comprehensive OR test, $z = 2.09$, $P < 0.05$.

There are statistical differences. The probability of gastrointestinal adverse events in patients treated with TGt was lower than that in the control group. There was no publication bias in the Egger linear regression test ($P > 0.05$). The results of metaregression analysis showed that the course of treatment and the age of the patients had influence on the combined effect ($P < 0.05$). The results of subgroup analysis showed that the probability of gastrointestinal adverse events in patients with NS treated with TGt was lower than that in patients with other diseases.

3.3.3. Leukopenia. A total of 18 studies included leukopenia in patients. A total of 1248 patients were involved. Among them, 59 patients had leukopenia in their blood. The weighted combination results (Figure 11) show that the data of the 18 studies are homogeneous ($I^2 = 0.0\%$, $P > 0.05$). Using the fixed effect model, the combined OR $= 0.68$, and the 95% confidence interval was (0.41, 1.13). For the comprehensive OR test, $z = 1.48$, $P > 0.05$. There is no statistical difference. Patients treated with TGt were as likely to have leukopenia as those in the control group. There was no publication bias detected by Egger’s linear regression ($P > 0.05$).

3.3.4. Liver Injury. A total of 11 studies included drug-induced liver injury. A total of 661 patients were enrolled. Among them, 39 patients had liver injury. The weighted merging results (Figure 12) showed that the data of the 11 studies were homogeneous ($I^2 = 9.3\%$, $P > 0.05$). Using the fixed effect model, the combined OR $= 0.906$, and the 95% confidence interval was (0.495, 1.658). For the comprehensive OR test, $z = 0.32$, $P > 0.05$. There is no statistical difference. Patients treated with TGt are as likely to have liver injury events as other drugs. There was no publication bias in the Egger linear regression test ($P > 0.05$).

3.3.5. Respiratory Tract Infection. A total of 706 patients were included in 10 studies. Among them, 35 patients developed respiratory tract infection. The weighted merging results (Figure 13) showed that the data of the 10 studies were homogeneous ($I^2 = 0.0\%$, $P > 0.05$). The fixed effect model was used, the combined OR $= 0.76$, and the 95% confidence interval was (0.395, 1.46). For the comprehensive OR test, $z = 0.82$, $P > 0.05$. There is no statistical difference. Patients treated with TGt are as likely to develop respiratory infections as other drugs. There was no publication bias in the Egger linear regression test ($P > 0.05$).

3.3.6. Dizziness and Headache. A total of 719 patients were included in 9 studies. Among them, 39 patients developed dizziness and headache. The incidence of adverse events and its subgroups were analyzed according to the type of disease, the course of treatment, and the age of the patients. The weighted combination results (Figure 14) show that the 9 studies are homogeneous ($I^2 = 0.0\%$, $P > 0.05$). Using the fixed effect model, the combined OR $= 0.498$, and the 95% confidence interval is (0.257, 0.965). For the comprehensive OR test, $z = 2.06$, $P < 0.05$. There are statistical differences.
| Study ID | WMD (95% CI) | Weight (%) |
|---------|--------------|------------|
| NS      |              |            |
| TanWei (2014) | 4.69 (1.50, 7.88) | 2.02 |
| Chang Xue-jing (2013) | 2.00 (−0.51, 4.51) | 2.18 |
| Deng Shun-tian (2017) | 9.73 (7.57, 11.93) | 2.25 |
| Zhang Li-ya (2019) | 4.85 (3.54, 6.16) | 2.40 |
| Deng Ming-hua (2014) | −4.80 (−8.13, −1.47) | 1.98 |
| Zhou Zhao-xie (2018) | 4.02 (2.29, 5.75) | 2.34 |
| Niu He-jun (2015) | 3.28 (1.54, 5.02) | 2.33 |
| Zhang Pei-guang (2019) | 4.81 (3.89, 7.23) | 2.20 |
| Gao Xiao-feng (2019) | 5.93 (3.28, 8.58) | 2.15 |
| Ni Ying (2017) | 5.73 (3.58, 7.88) | 2.25 |
| Zhao Jing-Yu (2018) | 5.02 (3.02, 7.02) | 2.28 |
| Lao Zhi-mou (2014) | 4.00 (1.86, 6.14) | 2.26 |
| Lv Li-hua (2017) | 4.80 (2.82, 6.78) | 2.29 |
| Liu Qian (2017) | 5.36 (4.02, 6.70) | 2.40 |
| Zhang Bao-guo (2019) | 5.69 (3.66, 7.72) | 2.28 |
| Jiang Xiao-li (2014) | 5.60 (3.51, 7.69) | 2.27 |
| Jiang Chun-xia (2016) | 7.92 (5.58, 10.26) | 2.22 |
| Liao Wen (2016) | 9.60 (8.55, 10.65) | 2.44 |
| Wang Dan-guo (2020) | −7.68 (−10.12, −5.24) | 2.19 |
| Guo Peng (2016) | 5.80 (3.67, 7.93) | 2.26 |
| Subtotal (I-squared = 92.3%, p = 0.000) | 4.41 (2.84, 5.97) | 44.97 |
| RNS      |              |            |
| Jiao Lin-jian (2020) | 5.19 (4.01, 6.37) | 2.42 |
| Chen hui (2015) | 14.65 (11.63, 17.67) | 2.06 |
| Wang Xiao-xue (2019) | 6.60 (5.33, 7.87) | 2.41 |
| Wang Mao-he (2016) | 8.92 (7.15, 10.69) | 2.33 |
| Xu Qing-yun (2014) | −4.40 (−5.90, −2.90) | 2.37 |
| Niu qing (2016) | 5.60 (2.60, 8.60) | 2.06 |
| Niu qing (2017) | 4.23 (3.17, 5.29) | 2.43 |
| Guo Yong (2018) | 7.68 (3.47, 11.89) | 1.77 |
| Liu Qian (2016) | 7.85 (4.89, 10.81) | 2.67 |
| Liu Yi (2017) | 4.69 (2.78, 6.60) | 2.30 |
| Guo Xiao-ping (2017) | 5.24 (4.28, 6.20) | 2.45 |
| Fan De-yong (2014) | 4.42 (3.18, 5.66) | 2.41 |
| Subtotal (I-squared = 95.1%, p = 0.000) | 5.73 (3.69, 7.76) | 27.09 |
| PNS      |              |            |
| NingXiao-li (2019) | 7.26 (5.21, 9.31) | 2.28 |
| ChenYuan-shu (2018) | 0.26 (−1.16, 1.68) | 2.39 |
| XuXiao-qin (2020) | 4.02 (2.05, 5.99) | 2.29 |
| TianJun-wei (2017) | 6.14 (4.96, 7.32) | 2.42 |
| JiangLiang-yan (2013) | −0.06 (−1.62, 1.50) | 2.36 |
| ChenWei-wei (2013) | 8.42 (4.63, 12.21) | 1.87 |
| ZhouZhen-zhong (2015) | 2.79 (0.27, 5.31) | 2.18 |
| LiHan (2017) | 8.78 (7.75, 9.81) | 2.44 |
| LouXue-hang (2014) | 1.00 (−2.25, 4.25) | 2.00 |
| LiXiao-hong (2015) | −0.80 (−3.89, 2.29) | 2.04 |
| Subtotal (I-squared = 94.7%, p = 0.000) | 3.80 (1.35, 6.25) | 22.26 |
| MN      |              |            |
| Qe Wei (2016) | 0.94 (−2.19, 4.07) | 2.03 |
| Mo Yao-mei (2019) | 4.17 (0.30, 7.94) | 1.85 |
| Subtotal (I-squared = 38.2%, p = 0.203) | 2.34 (−0.79, 5.48) | 3.88 |
| IgAN    |              |            |
| Chen Ye (2018) | 4.60 (0.48, 8.72) | 1.79 |
| Subtotal (I-squared = .%, p = .) | 4.60 (0.48, 8.72) | 1.79 |
| Overall (I-squared = 93.2%, p = 0.000) | 4.56 (3.52, 5.59) | 100.00 |

**Figure 8:** Comparison of drug intervention on serum albumin between the experimental group and the control group with different types of diseases.
Patients treated with TGT were less likely to have dizziness and headache than those treated with other drugs. Publication bias was detected by Eagger’s linear regression (P < 0.05). The results of metaregression analysis showed that the type of disease, the course of treatment, and the age of the patients had no influence on the combined effect (P > 0.05). The results of subgroup analysis showed that the incidence of dizziness and headache in patients with NS treated with TGT was lower than that in patients with other diseases (P < 0.05). The incidence of dizziness and headache in middle-aged patients treated with TGT was lower than that in the elderly (P < 0.05).

### 3.3.7. Elevated Blood Sugar
A total of 213 patients were included in 4 studies. Among them, 12 patients had elevated blood glucose. The results of weighted combination show that the data of the 4 studies are homogeneous (I² = 0.0%, P > 0.05). Using the fixed effect model, the combined OR = 0.724, and the 95% confidence interval was (0.235, 2.225). For the comprehensive OR test, z = 0.56, P > 0.05 (Figure 15). There is no statistical difference. Patients treated with TGT are as likely to have elevated blood sugar as those treated with other drugs. There was no publication bias in the Egger linear regression test (P > 0.05).

### 3.4. Outcome Indicators’ Evidence Quality Rating
The quality of evidence was evaluated by GRADEpro software, and the results showed that TGT is recommended to treat chronic nephropathy. See Figure 16.

### 4. Discussion
Chronic kidney disease is a clinical syndrome gradually developed from a variety of primary and/or secondary kidney diseases in the acute stage, which may seriously endanger human life and health. The pathogenesis of the disease is complex; the disease often develops continuously and eventually develops into end-stage renal failure [89]. TGT is a highly polar mixture of fat-soluble components extracted and purified from the roots of *Tri-tergynium wilfordii*, including diterpene lactones, alkaloids, and triterpenes [90]. Some studies have shown that TGT cannot replace hormones but can be used as an effective adjuvant drug [91]. Clinically, in the treatment of renal disease, it can effectively protect the integrity of the charge barrier of glomerular filtration membrane, significantly reduce renal albuminuria, and improve nephropathy [92] [93]. Studies have shown that TGT can cause ovarian damage and menstrual disorders in women, while it may lead to infertility in men. Other studies have shown that TGT may cause myelosuppression [94]. In this paper, the clinical effective rate was evaluated according to the Chinese guidelines on the efficacy of glomerular diseases. Compared with adrenocortical hormones or immunosuppressants, TGT can significantly reduce 24-hour urinary protein, increase plasma albumin, and improve the cure rate in patients with chronic kidney disease. According to the results of meta-analysis, compared with adrenocortical hormones or immunosuppressants, TGT can be used for treating patients with RNS and MN. In different types of chronic renal disease, TGT was used to reduce 24-hour urinary protein in patients with primary nephrotic syndrome. The results of subgroup analysis showed that the effect of combination was better than that of TGT alone. Patients need to take medication according to the symptoms and follow the doctor’s advice; not the longer the medication, the better the effect. Only 7 articles included the data of disease recurrence. According to statistical analysis, TGT can significantly reduce the recurrence rate of patients with chronic kidney disease. However, compared with
| Study ID | OR (95% CI) | Weight (%) |
|---------|-------------|-------------|
| NS      |             |             |
| Li Peng (2018) | 0.20 (0.04, 1.02) | 3.06 |
| Shi Qing-wan (2018) | 0.84 (0.26, 2.70) | 2.53 |
| Song Bo (2018) | 0.75 (0.18, 3.06) | 1.85 |
| Deng Shun-tian (2017) | 4.47 (1.50, 13.36) | 1.30 |
| Zhang Li-yang (2019) | 0.46 (0.11, 1.98) | 2.29 |
| Ni He-jun (2015) | 0.17 (0.03, 0.92) | 2.95 |
| Yan Ling-zhi (2014) | 0.15 (0.05, 0.47) | 6.29 |
| Gao Xiao-feng (2019) | 0.15 (0.02, 1.27) | 2.40 |
| Ni Ying (2017) | 0.14 (0.01, 2.69) | 1.42 |
| Wu Wen-sheng (2019) | 0.30 (0.06, 1.58) | 2.34 |
| Xiong Xin-rong (2019) | 0.32 (0.08, 1.33) | 3.03 |
| Liu Fan (2017) | 0.79 (0.20, 3.07) | 1.92 |
| Zhang Zhi-fang (2015) | 0.18 (0.04, 0.90) | 3.51 |
| Luo Zhi-mou (2014) | 0.20 (0.06, 0.72) | 4.43 |
| Liu Shu-sheng (2014) | 0.07 (0.01, 0.58) | 4.42 |
| Zhang Bao-guo (2019) | 1.56 (0.24, 10.05) | 0.74 |
| Jiang Xiao-li (2014) | 1.22 (0.36, 4.14) | 1.90 |
| Jiang Chun-xia (2016) | 1.00 (0.22, 4.56) | 1.37 |
| Liu Qian (2017) | 1.65 (0.61, 4.44) | 2.52 |
| Subtotal (I-squared = 57.9%, p = 0.001) | 0.54 (0.40, 0.72) | 50.27 |
| RNS     |             |             |
| Chen Hui (2015) | 0.51 (0.19, 1.35) | 4.62 |
| Xu Hua (2019) | 0.84 (0.26, 2.69) | 2.54 |
| Xu Qing-yun (2016) | 0.23 (0.02, 2.16) | 1.60 |
| Liu Qian (2016) | 0.40 (0.12, 1.36) | 3.42 |
| Jiang Gan-ru (2014) | 0.19 (0.05, 0.77) | 3.96 |
| Fan De-yong (2014) | 0.13 (0.08, 0.89) | 3.07 |
| Subtotal (I-squared = 0.0%, p = 0.677) | 0.41 (0.25, 0.69) | 19.21 |
| PNS     |             |             |
| Li Wei-chao (2013) | 0.22 (0.04, 1.11) | 2.62 |
| Xu Xiao-qin (2020) | 0.84 (0.27, 2.65) | 2.62 |
| Bao Yu (2013) | 0.27 (0.09, 0.77) | 5.61 |
| Zhu Jun-li (2020) | 1.26 (0.49, 3.22) | 3.18 |
| ZhangQian (2019) | 0.72 (0.23, 2.24) | 2.89 |
| ChenWei-wei (2013) | 0.36 (0.06, 2.01) | 1.92 |
| ZhouZhen-zhong (2015) | 0.53 (0.11, 2.60) | 1.74 |
| LiHan (2017) | 0.28 (0.10, 0.81) | 5.72 |
| Liu Jin-ping (2016) | 0.18 (0.02, 1.61) | 2.00 |
| Subtotal (I-squared = 14.2%, p = 0.316) | 0.49 (0.33, 0.74) | 28.32 |
| MN      |             |             |
| Mo Yao-mei (2019) | 1.41 (0.27, 7.26) | 1.00 |
| Subtotal (I-squared = .%, p = .) | 1.41 (0.27, 7.26) | 1.00 |
| IgAN    |             |             |
| Chen Ye (2018) | 3.56 (1.09, 11.55) | 1.20 |
| Subtotal (I-squared = .%, p = .) | 3.56 (1.09, 11.55) | 1.20 |
| Overall (I-squared = 48.0%, p = 0.001) | 0.55 (0.44, 0.67) | 100.00 |

Figure 9: Comparison of adverse reactions caused by drugs in different types of experimental group and control group.
Table 8: Meta-analysis of the incidence of gastrointestinal adverse reactions.

| Subgroup analysis          | No. of studies | Weighted combination OR [95% conf. interval] | Heterogeneity | Egger’s bias P value | Metagression P value | I² | P value |
|----------------------------|----------------|---------------------------------------------|---------------|----------------------|----------------------|----|---------|
| **Disease type**           |                |                                             |               |                      |                      |    |         |
| NS                         | 16             | 0.604 (0.391, 0.932)                        | P < 0.05      | 0.0%                 | P > 0.05             | 5  | P > 0.05 |
| RNS                        | 4              | 0.890 (0.414, 1.913)                        | P > 0.05      | 17.6%                | P > 0.05             | 5  | P > 0.05 |
| PNS                        | 8              | 0.686 (0.340, 1.383)                        | P > 0.05      | 0.0%                 | P > 0.05             | 5  | P > 0.05 |
| MN                         | 2              | 1.859 (0.493, 7.002)                        | P > 0.05      | 0.0%                 | P > 0.05             | 5  | P > 0.05 |
| **Mode of medication**     |                |                                             |               |                      |                      |    |         |
| Single drug                | 3              | 0.737 (0.258, 2.105)                        | P > 0.05      | 0.0%                 | 0.455                | 5  | P > 0.05 |
| Combined use of drugs      | 27             | 0.727 (0.523, 1.011)                        | P > 0.05      | 0.0%                 | 0.73                 | 5  | P > 0.05 |
| **Course of treatment**    |                |                                             |               |                      |                      |    |         |
| <6 months                  | 8              | 0.783 (0.428, 1.433)                        | P > 0.05      | 61.4%                | P < 0.05             | 5  | P > 0.05 |
| ≥6 months                  | 15             | 0.796 (0.520, 1.218)                        | P > 0.05      | 51.4%                | P < 0.05             | 5  | P > 0.05 |
| ≥12 months                 | 7              | 0.501 (0.236, 1.063)                        | P > 0.05      | 40.2%                | P < 0.05             | 5  | P > 0.05 |
| **Age of the patient (year)** |              |                                             |               |                      |                      |    |         |
| 0–18                       | 1              | 2.211 (0.484, 10.092)                       | P > 0.05      | 91.0%                | P < 0.05             | 5  | —       |
| 19–65                      | 20             | 0.711 (0.482, 1.047)                        | P > 0.05      | 47.7%                | P < 0.05             | 5  | P > 0.05 |
| >66                        | 9              | 0.642 (0.356, 1.159)                        | P > 0.05      | 24.7%                | P < 0.05             | 5  | P > 0.05 |
| **Total**                  | 30             | 0.711 (0.517, 0.980)                        | P > 0.05      | 0.0%                 | P < 0.05             | 5  | —       |

Study ID | OR (95% CI) | Weight (%)
----------|-------------|--------------
NS        |             |              |
Li Peng (2018) | 0.13 (0.01, 2.61) | 3.83 |
Shi Qing-wan (2018) | 1.53 (0.24, 8.95) | 2.09 |
Song Bo (2018) | 1.50 (0.24, 9.57) | 2.07 |
Deng Shun-tian (2017) | 3.18 (0.32, 32.14) | 1.02 |
Zhang Li-yang (2019) | 0.65 (0.10, 4.10) | 3.19 |
Niu He-jun (2015) | 0.12 (0.01, 2.53) | 3.80 |
Yan Ling-zhi (2014) | 1.56 (0.24, 10.05) | 2.00 |
Ni Ying (2017) | 0.79 (0.20, 3.08) | 5.20 |
Wu Wen-sheng (2019) | 0.32 (0.03, 3.18) | 3.26 |
Xiong Xin-rong (2019) | 0.32 (0.08, 1.33) | 8.24 |
Liu Fan (2017) | 0.66 (0.11, 4.06) | 3.24 |
Zhang Zhi-fang (2015) | 0.15 (0.02, 1.27) | 6.51 |
Luo Zhi-mou (2014) | 0.31 (0.05, 1.81) | 5.05 |
Zhang Bao-guo (2019) | 1.00 (0.06, 16.76) | 1.08 |
Jiang Xiao-li (2014) | 1.30 (0.31, 5.37) | 3.73 |
Liu Qian (2017) | 0.37 (0.07, 2.02) | 5.29 |
Subtotal (I-squared = 0.0%, p = 0.683) | 0.60 (0.39, 0.93) | 59.61 |
RNS        |             |              |
Xu Hua (2019) | 1.38 (0.28, 6.76) | 2.91 |
Liu Qian (2016) | 2.80 (0.50, 15.73) | 1.86 |
Jiang Gan-ru (2014) | 0.48 (0.10, 2.20) | 5.38 |
Fan De-yong (2014) | 0.37 (0.07, 2.03) | 5.33 |
Subtotal (I-squared = 17.6%, p = 0.303) | 0.89 (0.41, 1.91) | 15.48 |
PNS        |             |              |
Xu Xiao-qin (2020) | 0.65 (0.10, 4.13) | 3.15 |
Bao Yu (2013) | 5.29 (0.25, 114.16) | 0.52 |
Zhu Jun-li (2020) | 3.15 (0.31, 31.48) | 1.04 |
Zhang Qian (2019) | 0.49 (0.04, 5.58) | 2.18 |
Chen Wei-wei (2013) | 0.47 (0.08, 2.75) | 4.17 |
Zhong Zhen-zhong (2015) | 0.47 (0.04, 5.69) | 2.12 |
Li Han (2017) | 0.37 (0.07, 2.03) | 5.33 |
Liu Jun-ping (2016) | 0.19 (0.01, 4.08) | 2.75 |
Subtotal (I-squared = 0.0%, p = 0.673) | 0.69 (0.34, 1.38) | 21.26 |
MN         |             |              |
Mo Yao-mei (2019) | 1.00 (0.06, 17.12) | 1.06 |
Chen Ye (2018) | 2.21 (0.48, 10.09) | 2.59 |
Subtotal (I-squared = 0.0%, p = 0.629) | 1.86 (0.49, 7.00) | 3.65 |
Overall (I-squared = 0.0%, p = 0.772) | 0.71 (0.52, 0.98) | 100.00 |

Figure 10: Comparison of gastrointestinal adverse reactions induced by drugs in different types of diseases between the experimental group and the control group.
### Figure 11: Comparison of the intervention of drugs on leukopenia between the experimental group and the control group.

| Study ID                | OR (95% CI)      | Weight (%) |
|-------------------------|------------------|------------|
| Luo Zhi-mou (2014)      | 0.22 (0.01, 5.61)| 4.74       |
| Jiang Gan-ru (2014)     | 0.11 (0.01, 2.27)| 9.89       |
| Fan De-yong (2014)      | 0.33 (0.01, 8.22)| 4.00       |
| Zhang Zhi-fang (2015)   | 0.33 (0.01, 8.22)| 4.00       |
| Zhou Zhen-zhong (2015)  | 1.00 (0.06, 17.18)| 2.56      |
| Liu Qian (2016)         | 2.07 (0.18, 24.15)| 2.52      |
| Deng Shun-tian (2017)   | 2.20 (0.51, 9.58)| 6.74       |
| Ni Ying (2017)          | 0.69 (0.21, 2.30)| 17.30      |
| Liu Qian (2017)         | 0.49 (0.04, 5.60)| 5.26       |
| Li Han (2017)           | 0.49 (0.04, 5.59)| 5.28       |
| Li Peng (2018)          | 0.31 (0.03, 3.17)| 7.82       |
| Song Bo (2018)          | 0.32 (0.01, 8.00)| 4.04       |
| Chen Ye (2018)          | 1.50 (0.23, 9.87)| 4.84       |
| Zhang Li-yang (2019)    | 0.49 (0.04, 5.59)| 5.27       |
| Wu Wen-sheng (2019)     | 0.19 (0.01, 4.09)| 6.66       |
| Zhang Bao-guo (2019)    | 3.10 (0.12, 79.23)| 1.28     |
| Xu Hua (2019)           | 0.48 (0.04, 5.62)| 5.22       |
| Mo Yao-mei (2019)       | 1.00 (0.06, 17.12)| 2.57 |
| Overall (I-squared = 0.0%, p = 0.948) | 0.68 (0.41, 1.13) | 100.00 |

### Figure 12: Comparison of liver injury induced by drugs in the experimental group and the control group.

| Study ID                | OR (95% CI)      | Weight (%) |
|-------------------------|------------------|------------|
| Deng Shun-tian (2017)   | 4.38 (0.46, 41.22)| 4.02       |
| Niu He-jun (2015)       | 3.15 (0.12, 82.16)| 2.10       |
| Luo Zhi-mou (2014)      | 0.09 (0.00, 1.78)| 18.54      |
| Liu Qian (2017)         | 0.49 (0.04, 5.60)| 8.82       |
| Subtotal (I-squared = 40.2%, p = 0.170) | 0.90 (0.32, 2.56) | 33.48      |

### RNS

| Study ID                | OR (95% CI)      | Weight (%) |
|-------------------------|------------------|------------|
| Xu Hua (2019)           | 0.48 (0.04, 5.62)| 8.75       |
| Liu Qian (2016)         | 0.64 (0.10, 4.15)| 12.66      |
| Jiang Gan-ru (2014)     | 0.16 (0.01, 3.55)| 11.85      |
| Subtotal (I-squared = 0.0%, p = 0.753) | 0.43 (0.12, 1.58) | 33.27      |

### PNS

| Study ID                | OR (95% CI)      | Weight (%) |
|-------------------------|------------------|------------|
| Bao Yu (2013)           | 5.29 (0.25, 114.16)| 2.11       |
| Li Han (2017)           | 0.37 (0.07, 2.03)| 21.65      |
| Subtotal (I-squared = 55.3%, p = 0.135) | 0.81 (0.23, 2.90) | 23.76      |

### MN

| Study ID                | OR (95% CI)      | Weight (%) |
|-------------------------|------------------|------------|
| Mo Yao-mei (2019)       | 3.15 (0.12, 81.74)| 2.11       |
| Subtotal (I-squared = .%, p = .) | 3.15 (0.12, 81.74) | 2.11       |

### IgAN

| Study ID                | OR (95% CI)      | Weight (%) |
|-------------------------|------------------|------------|
| Chen Ye (2018)          | 2.75 (0.48, 15.79)| 7.38       |
| Subtotal (I-squared = .%, p = .) | 2.75 (0.48, 15.79) | 7.38       |
| Overall (I-squared = 9.3%, p = 0.356) | 0.91 (0.50, 1.66) | 100.00     |
Overall (I-squared = 0.0%, p = 0.855)

Jiang Xiao-li (2014)
Liu Qian (2016)
Bao Yu (2013)
Chen Wei-wei (2013)
Xu Hua (2019)
Jiang Chun-xia (2016)
Liu Jin-ping (2016)
Ni Ying (2017)
Xu Xiao-qin (2020)
Deng Shun-tian (2017)
Study ID
OR (95% CI) Weight (%)

3.08 (0.12, 78.27) 2.30

1.36 (0.29, 6.34) 13.45

1.00 (0.06, 16.74) 4.65

1.00 (0.06, 16.97) 4.60

1.00 (0.06, 16.74) 4.65

1.38 (0.28, 6.80) 12.49

0.73 (0.15, 3.51) 17.57

0.08 (0.00, 1.15)

0.49 (0.04, 5.60)

0.18 (0.01, 4.04)

1.00 (0.14, 7.33)

0.31 (0.03, 3.17)

1.00 (0.24, 4.24)

0.47 (0.04, 5.45)

1.00 (0.06, 16.53)

0.73 (0.15, 3.48)

0.76 (0.40, 1.46) 100.00

Figure 13: Comparison of respiratory tract infection caused by drugs in the experimental group and the control group.

Overall (I-squared = 0.0%, p = 0.824)

Jiang Chun-xia (2016)
Zhang Zhi-fang (2015)

Study ID
OR (95% CI) Weight (%)

0.06 (0.00, 1.15) 24.61

0.49 (0.04, 5.60) 7.50

0.18 (0.01, 4.04) 9.43

1.00 (0.14, 7.33) 7.46

0.31 (0.03, 3.17) 11.16

1.00 (0.24, 4.24) 14.16

0.47 (0.04, 5.45) 7.59

1.00 (0.06, 16.53) 3.76

0.73 (0.15, 3.48) 14.34

0.50 (0.26, 0.97) 100.00

Figure 14: Comparison of dizziness and headache caused by drugs in the experimental group and the control group.
adrenocortical hormones or immunosuppressants, TGt can significantly reduce the level of Scr in patients with chronic kidney disease, but the level of blood urea nitrogen is not significant. Therefore, the use of TGt for the recovery of renal function needs a lot of data. In evaluating the safety of TGt, the results of meta-analysis showed that TGt could significantly reduce the incidence of neurogenic dizziness and headache and gastrointestinal adverse reactions compared with adrenocortical hormones or immunosuppressants. However, the effects on liver injury, respiratory infections, and hematological adverse reactions such as leukopenia were similar to those of adrenocortical hormones or immunosuppressants, and there was no statistical difference. A total of 75 articles were included in this paper, of which 38 articles recorded adverse reactions caused by drugs. However, only 2 studies [31, 44] reported menstrual disorder, and the patients in these two articles were all patients with NS, but there were no such reports in patients with other disease types. This is different from the

| Study ID | OR (95% CI) | Weight (%) |
|----------|-------------|------------|
| NS       |             |            |
| Deng Shun-tian (2017) | 3.18 (0.32, 32.14) | 12.67 |
| Niu He-jun (2015) | 0.18 (0.01, 4.01) | 33.73 |
| Xiong Xin-rong (2019) | 0.32 (0.03, 3.18) | 40.43 |
| Subtotal (I-squared = 29.5%, p = 0.242) | 0.68 (0.20, 2.32) | 86.84 |
| MN       |             |            |
| Mo Yao-mei (2019) | 1.00 (0.06, 17.12) | 13.16 |
| Subtotal (I-squared = 0%, p = .) | 1.00 (0.06, 17.12) | 13.16 |
| Overall (I-squared = 0.0%, p = 0.409) | 0.72 (0.24, 2.22) | 100.00 |

Figure 15: Comparison of the increase of blood glucose induced by drugs in the experimental group and the control group.
Tripterygium wilfordii polyglycosides for chronic kidney disease

Patient or population: patients with chronic kidney disease

Settings: RCT

Intervention: Tripterygium wilfordii polyglycosides

| Outcomes                          | Illustrative comparative risks* (95% CI) | Relative effect (95% CI) | No of Participants (studies) | Quality of the evidence (GRADE) | Comments |
|-----------------------------------|----------------------------------------|--------------------------|------------------------------|---------------------------------|----------|
| 24-hour urinary protein           |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            |                                        |                          |                              |                                 |          |
| WMD                              | See comment                            | See comment              | 4661 (57 studies)            | Moderate1                        |          |
| Total efficiency                  | Study population                       | OR 3.328 (2.873 to 3.857)| 5610 (69 studies)            | Moderate1                        |          |
| OR                                |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.58 (0.473 to 0.71)  | 2730 (38 studies)            | Moderate2                        |          |
| Serum creatinine level            | Study population                       | OR 0.720 (0.531 to 0.997)| 2242 (31 studies)            | Moderate2                        |          |
| WND                              |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.60 (0.41 to 1.13)   | 1240 (18 studies)            | Moderate2                        |          |
| Blood urea nitrogen level         | Study population                       | OR 0.720 (0.531 to 0.997)| 2242 (31 studies)            | Moderate2                        |          |
| WND                              |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.60 (0.41 to 1.13)   | 1240 (18 studies)            | Moderate2                        |          |
| Plasma albumin level              | Study population                       | OR 0.60 (0.41 to 1.13)   | 1240 (18 studies)            | Moderate2                        |          |
| WND                              |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 1 (0.56 to 1.79)      | 713 (12 studies)             | Moderate2                        |          |
| Liver injury                      | Study population                       | OR 1 (0.56 to 1.79)      | 713 (12 studies)             | Moderate2                        |          |
| OR                                |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.60 (0.41 to 1.13)   | 1240 (18 studies)            | Moderate2                        |          |
| Respiratory tract infection       | Study population                       | OR 0.74 (0.39 to 1.38)   | 758 (11 studies)             | Moderate2                        |          |
| OR                                |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.60 (0.26 to 0.97)   | 719 (9 studies)              | Moderate2                        |          |
| Dizziness and headache            | Study population                       | OR 0.60 (0.26 to 0.97)   | 719 (9 studies)              | Moderate2                        |          |
| OR                                |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.60 (0.26 to 0.97)   | 719 (9 studies)              | Moderate2                        |          |
| Elevated blood sugar              | Study population                       | OR 0.57 (0.31 to 0.92)   | 265 (5 studies)              | Low                             |          |
| OR                                |                                        |                          |                              |                                 |          |
| Follow up: 1–24 months            | Study population                       | OR 0.19 (0.1 to 0.39)    | 536 (7 studies)              | Moderate2                        |          |
| Relapse                           | Study population                       | OR 0.19 (0.1 to 0.39)    | 536 (7 studies)              | Moderate2                        |          |

*The basic for the assumed risk (e.g. the median control group risk across studies) is provided in footnotes. The corresponding risk (and its 95% confidence interval) s based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI)

CI: confidence interval; OR: Odds ratio.

GRADE Working Group grades of evidence

High quality: Further research is very unlikely to change our confidence in the estimate of effect.

Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

1 Due to the type of disease, course of treatment, patient age, drug use.

2 This outcome measure alone cannot be used as evidence to compare the two groups.

Figure 16: Evaluation of evidence quality of outcome indicators of TGt in the treatment of chronic nephropathy.
research conclusion of ZhuBin scholars. Therefore, more high-quality literature is needed to further explore its adverse reactions, especially for different types of chronic kidney disease and other diseases.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] L.A. Stevens, "Evaluation and management of chronic kidney disease: synopsis of the kidney disease: improving global outcomes 2012 clinical practice guideline," *Annals of Internal Medicine*, vol. 158, p. 11, 2013.

[2] G.G. Vivekanandji Kunitoshi et al., "Chronic kidney disease: global dimension and perspectives," *The Lancet*, vol. 382, p. 9888, 2013.

[3] C.G. Jankowska MB. Lindholm et al., "Inflammation and protein-energy wasting in the uremic milieu. Contrib Nephrol," *Contributions to Nephrology*, vol. 191, pp. 58–71, 2018.

[4] Q.Q. Zha, "Protein nutrition and malnutrition in CKD and ESRD," *Nutrients*, vol. 3, no. 9, pp. 34–35, 2014.

[5] X.S. Jiang, Lv et al., "Alteration of the gut microbiota in Chinese population with chronic kidney disease," *Science Report*, vol. 1, no. 7, p. 2870, 2016.

[6] M. We, "Cachexia in chronic kidney disease: a link to defective central nervous system control of appetite," *Journal of Clinical Investigation*, vol. 6115 pages, 2005.

[7] G.F. Oner and H. Kocak, "Appetite-regulating hormones in chronic kidney disease patients," *Journal of Renal Nutrition*, vol. 421 pages, 2020.

[8] L.Q. Xie, "New progress in clinical research of nephropathy," *Chinese Journal Of Nephropathy*, vol. 21, no. 06, pp. 471–473, 2016.

[9] "Nephrotic syndrome," *Primary Care*, vol. 474 pages, 2015.

[10] S.Y. Yao JiruS. Luo et al., "Progress in clinical application of polyglycosides of Tripterygium wilfordii," *Chinese Journal of New Drugs and Clinical Medicine*, vol. 29, no. 3, pp. 179–182, 2012.

[11] L. Fang, "Pharmacological study and clinical application of polyglycosides of Tripterygium wilfordii," *Proprietary Chinese Medicine*, vol. 5, pp. 63–65, 2014.

[12] L.G. Yang and L. Jin, "Recent research status of Tripterygium wilfordii in the treatment of nephrotic syndrome," *Journal of Liaoning University of Traditional Chinese Medicine*, vol. 11, no. 4, pp. 66–67, 2013.

[13] L. Jiehong, *Study on Draft Guidelines for Clinical Diagnosis and Treatment of Pediatric Nephrotic Syndrome Based on Standardization of Traditional Chinese Medicine*, Hebei University of traditional Chinese Medicine, Hubei, China, 2015.

[14] Z.H. Jiang and X. Zhang, "Research progress on adverse reactions and compatibility of polyglycosides of Tripterygium wilfordii," *Chinese Journal Of Traditional Chinese Medicine*, pp. 1–9, 2013.

[15] T. Wei, "Observation on the clinical effect of Tripterygium wilfordii polyglycosides tablets in the diagnosis and treatment of nephrotic syndrome in 30 cases," *Chinese Medicine Refers to the South*, vol. 12, no. 17, pp. 140–141, 2007.

[16] Li Peng, "Analysis of the efficacy of Tripterygium wilfordii polyglycosides combined with hormone in the treatment of patients with nephropathy syndrome," *Cardiology Medicine and Students*, vol. 24, no. 31, pp. 119–120, 2013.

[17] L. Minghua, "Effects of Tripterygium wilfordii polyglycosides tablets combined with glucocorticoids on renal function and renal function in patients with nephrotic syndrome," *Health and Nutrition in China*, vol. 28, no. 14, p. 114, 2008.

[18] S. Qingwan, "Clinical analysis of Tripterygium wilfordii polyglycosides tablets combined with corticosteroids in the treatment of patients with nephrotic syndrome," *Modern Health Preservation*, vol. 11, pp. 105-106, 2002.

[19] G. Peng, "Comparison of Tripterygium wilfordii polyglycosides and cyclophosphamide in the treatment of nephrotic syndrome," *Everyone's Health*, vol. 2, p. 143, 2013.

[20] S.B. L. Yunqi, "Clinical efficacy of adding Tripterygium wilfordii polyglycosides tablets in the treatment of renal syndrome," *Glycosuria Heaven and Earth*, vol. 13, no. 12, p. 35, 2019.

[21] Y. Lan, "Comparative analysis of clinical therapeutic effects of different prescriptions in the treatment of renal syndromes," *Present Diagnosis And Treatment*, vol. 26, no. 4, pp. 843–844, 2014.

[22] X.Y. Chang, "Analysis of clinical efficacy of different methods in the treatment of nephrotic syndrome," *Chinese and Foreign Medicine*, vol. 32, no. 12, pp. 58–60, 2019.

[23] Y.Y. DengD. Dai et al., "Observation on the efficacy of prednisone acetate and cyclophosphamide pulse therapy combined with Tripterygium wilfordii polyglycosides in the treatment of nephrotic syndrome," *Clinical Research in China*, vol. 30, no. 5, pp. 631–634, 2008.

[24] D.H. Jiang Xiaoli and G. Wu, "Efficacy of methylprednisolone combined with Tripterygium wilfordii in the treatment of senile nephrotic syndrome," *Chinese Journal of Old Age Studies*, vol. 34, no. 3, pp. 683–684, 2019.

[25] J. Chunxia, "Clinical observation of methylprednisolone combined with Tripterygium wilfordii polyglycosides in the treatment of senile nephrotic syndrome," *Electron Journal of Clinical Medical Literature*, vol. 3, no. 36, pp. 7261-7262, 2019.

[26] X.L. Liao, "Clinical analysis of methylprednisolone combined with Tripterygium wilfordii polyglycosides in the treatment of senile nephrotic syndrome," *Modern Medical Hospital*, vol. 16, no. 11, pp. 1589-1590, 2017.

[27] W. Danguo, "Study on the efficacy of methylprednisolone combined with Tripterygium wilfordii in the treatment of senile nephrotic syndrome," *Chinese Medicine Refers to the South*, vol. 18, no. 2, p. 58, 2017.

[28] S.J. Zhang, "Observation on the efficacy of Tripterygium wilfordii combined with prednisolone in the treatment of nephrotic syndrome," *Heilongjiang Medicine and Pharmacyology*, vol. 42, no. 5, pp. 176-177, 2017.

[29] X.L. Deng, "Effect of Tripterygium wilfordii combined with glucocorticoid on regulatory T cells in patients with nephrotic syndrome," *Modern Medicine and Health*, vol. 30, no. 20, pp. 3051-3052, 2007.

[30] Z. Zhaoxie, "Evaluation of the efficacy of Tripterygium wilfordii combined with glucocorticoid in patients with nephrotic syndrome," *Modern Medicine and Health*, vol. 30, no. 20, pp. 3051-3052, 2007.
Evidence-Based Complementary and Alternative Medicine

<references>

[31] W. X. Niu and X. Chen, "Efficacy of Tripterygium wilfordii combined with glucocorticoid in the treatment of nephrotic syndrome," *Anhui Medicine*, vol. 36, no. 3, pp. 310–312, 2007.

[32] Z. P. Guang, "Clinical efficacy and safety of Tripterygium wilfordii polyglycoside combined with prednisone acetate in the treatment of nephrotic syndrome," *Chinese Pharmacoeconomics*, vol. 14, no. 11, pp. 89–91, 2007.

[33] Y. Lingzhi, "Clinical analysis of Tripterygium wilfordii polyglycosides combined with cyclophosphamide in the treatment of 60 cases of nephrotic syndrome," *Asia-Pacific Traditional Medicine*, vol. 10, no. 12, pp. 110–111, 2009.

[34] C. Fang, "Clinical observation of Tripterygium wilfordii polyglycosides combined with cyclophosphamide in the treatment of nephrotic syndrome," *Clinical Rational Use of Drugs*, vol. 5, no. 36, p. 19, 2007.

[35] L. Qian, "Clinical study on renal function of refractory adult nephrotic syndrome," *Southwest National Defense Medicine*, vol. 26, no. 5, pp. 511–513, 2007.

[36] G. Xiaofeng, "Effects of Tripterygium wilfordii polyglycosides combined with mycophenolate mofetil on renal function and recurrence rate in patients with nephrotic syndrome," *Exploration of Rational Drug Use in China*, vol. 16, no. 9, pp. 80–82, 2009.

[37] N. Ying, "Clinical analysis of Tripterygium wilfordii polyglycosides combined with mycophenolate mofetil in the treatment of nephrotic syndrome," *Modern Practical Medicine*, vol. 29, no. 7, pp. 889–890, 2009.

[38] W. J. Zhao and N. Wang, "Clinical study of Tripterygium wilfordii combined with immunosuppressant in the treatment of nephrotic syndrome," *Jilin Medicine*, vol. 39, no. 11, pp. 1592–1595, 2009.

[39] W. Wensheng, "Effects of Tripterygium wilfordii polyglycosides combined with prednisone on serum inflammatory mediators and renal function in patients with nephrotic syndrome," *Chinese Pharmacoeconomics*, vol. 14, no. 11, pp. 92–94, 2009.

[40] X. Xinrong, "Clinical effect of Tripterygium wilfordii polyglycosides tablets combined with prednisone in the treatment of nephrotic syndrome," *Chinese Contemporary Medicine*, vol. 26, no. 19, pp. 100–102, 2009.

[41] L. Fan, "Effects of Tripterygium wilfordii polyglycosides tablets combined with glucocorticoid on efficacy, renal function and serum inflammatory factors in patients with nephrotic syndrome," *Journal of Hunan Normal University (Medical Edition)*, vol. 14, no. 5, pp. 138–141, 2008.

[42] Z. Zhifang, "Analysis of clinical efficacy of Tripterygium wilfordii polyglycosides combined with glucocorticoid in the treatment of patients with nephrotic syndrome and its effect on serum inflammatory factors," *World Journal of Integrated Traditional Chinese and Western Medicine*, vol. 10, no. 8, pp. 1122–1124, 2008.

[43] L. Lijun, "Efficacy of Tripterygium wilfordii polyglycosides combined with glucocorticoid in the treatment of nephrotic syndrome," *Mixed Records of Shenzhen Integrated Traditional Chinese and Western Medicine*, vol. 29, no. 13, pp. 28–30, 2005.

[44] L. Zhimou, "Comparative study of Tripterygium wilfordii polyglycosides and cyclophosphamide in the treatment of nephrotic syndrome," *Drugs and People*, vol. 27, no. 5, pp. 65–66, 2005.

[45] H. J. Liu Shusheng, "Clinical analysis of 50 cases of nephrotic syndrome treated with Tripterygium wilfordii," *Jilin Medicine*, vol. 35, no. 3, p. 510, 2005.

[46] Z. Huqing, "Clinical observation of prednisone combined with Tripterygium wilfordii in the treatment of nephrotic syndrome," *Contemporary Medicine*, vol. 20, no. 21, pp. 137–138, 2013.

[47] L. X. Lihua and Y. Dong, "Preliminary evaluation on the effect of Tripterygium wilfordii combined with hormone in the treatment of nephrotic syndrome," *Journal of Aeronautical and Aerospace Medicine*, vol. 28, no. 11, pp. 1366–1367, 2013.

[48] Z. Baoguo, "Clinical observation on the treatment of nephrotic syndrome with combination of traditional Chinese and western medicine," *Journal of Practical Traditional Chinese Medicine*, vol. 35, no. 7, pp. 831–832, 2013.

[49] L. Yi, "Observation on the efficacy of Tripterygium wilfordii polyglycosides combined with glucocorticoid in the treatment of refractory nephrotic syndrome," *World Clinical Medicine*, vol. 11, no. 12, pp. 107–111, 2013.

[50] Z. Tingting, "Evaluation of the efficacy of leflunomide combined with Tripterygium wilfordii polyglycosides in the treatment of refractory nephrotic syndrome," *Diet to Keep Healthy*, vol. 5, no. 46, pp. 58, 2013.

[51] L. Qian, "Clinical study on renal function of refractory adult nephrotic syndrome treated by multi-target therapy," *Southwest Defense Medicine*, vol. 26, no. 5, pp. 511–513, 2011.

[52] N. Qing, "Clinical analysis of cyclophosphamide combined with Tripterygium wilfordii polyglycosides in the treatment of hormone-dependent nephrotic syndrome," *Internal Medicine*, vol. 12, no. 3, pp. 382–383, 2011.

[53] G. Yong, "Observation on the efficacy of leflunomide combined with Tripterygium wilfordii polyglycosides in the treatment of refractory nephrotic syndrome," *Chinese Modern Medicine and Students*, vol. 56, no. 6, pp. 105–106, 2011.

[54] G. Xiaoping, "Effect of Tripterygium wilfordii polyglycosides combined with mycophenolate mofetil on renal function in patients with refractory nephrotic syndrome," *Chinese and Foreign Medical Treatment*, vol. 36, no. 12, pp. 139–141, 2014.

[55] Z. Q. Wan and C. Tao, "Effects of Tripterygium wilfordii polyglycosides tablets on blood lipids, urinary protein, renal tissue KIM-1 and urinary TH glycoprotein in patients with refractory nephrotic syndrome," *Journal of Liaoning University of Traditional Chinese Medicine*, vol. 17, no. 11, pp. 112–114, 2014.

[56] C. Q. Jiao and S. Shi, "Effects of Tripterygium wilfordii polyglycosides tablets on urinary protein, inflammatory factors and immune function in patients with refractory nephrotic syndrome," *Clinical Research in China*, vol. 28, no. 1, pp. 137–139, 2014.

[57] C. F. Chen and Li Xiong, "Efficacy and renal function of mycophenolate mofetil combined with Tripterygium wilfordii polyglycosides in patients with refractory nephrotic syndrome," *Journal of Difficult and Difficult Diseases*, vol. 14, no. 4, pp. 363–365, 2004.

[58] X. Hua, "Observation on the efficacy of mycophenolate mofetil combined with Tripterygium wilfordii polyglycosides in the treatment of patients with refractory nephrotic syndrome," *Journal of Clinical Rational Drug Use*, vol. 12, no. 34, pp. 26–27, 2004.

[59] W. Xiaoxue, "Analysis of the effect of prednisone combined with Tripterygium wilfordii polyglycosides in the treatment of refractory nephrotic syndrome," *Chinese Practical Medicine*, vol. 11, no. 24, pp. 136–137, 2004.

[60] Q. M. Wang, "Analysis of the effect of Tripterygium wilfordii polyglycosides combined with glucocorticoid in the treatment of refractory nephrotic syndrome," *A Series of Contemporary Medical Theories*, vol. 12, no. 19, pp. 129–130, 2004.
[61] X. Qingyun, “Clinical analysis of glucocorticoid combined with Tripterygium wilfordii polyglycosides in the treatment of refractory nephrotic syndrome,” The New World of Diabetes, vol. 19, no. 16, pp. 33-34, 2004.
[62] X. C. Fan de Yong, “Observation on the efficacy of Tripterygium wilfordii combined with glucocorticoid in the treatment of refractory nephrotic syndrome,” Chinese Journal of Traditional Chinese Medicine, vol. 32, no. 4, pp. 958–960, 2004.
[63] X. Sufang, “Short-term efficacy of double-dose Tripterygium wilfordii polyglycosides in the treatment of primary nephrotic syndrome,” World Clinical Medicine, vol. 11, no. 23, p. 90, 2014.
[64] W. Yongqing, “Comparative study of two drug regimens in the treatment of primary nephrotic syndrome,” Medical Frontier, vol. 20, p. 174, 2018.
[65] L. Han, “Clinical observation of Tripterygium wilfordii polyglycosides combined with prednisone in the treatment of adult primary nephrotic syndrome,” Chinese Medical Engineering Program, vol. 25, no. 11, pp. 75–77, 2018.
[66] J. Ganru, “Observation on the efficacy of leflunomide combined with Tripterygium wilfordii polyglycosides and low-dose prednisone in the treatment of middle-aged and elderly patients with refractory nephrotic syndrome,” New Clinical Medicine in China, vol. 7, no. 6, pp. 519–521, 2014.
[67] B. Yu, “Clinical study of Tripterygium wilfordii combined with small and medium dose prednisone in the treatment of senile primary nephrotic syndrome,” Asia-Pacific Traditional Medicine, vol. 9, no. 7, pp. 172-173, 2001.
[68] H. Y. Tian and D. Li, “Effect of Tripterygium wilfordii polyglycosides on serum indexes in elderly patients with primary nephrotic syndrome,” Journal of Practical Clinical Medicine, vol. 21, no. 7, pp. 47–49, 2019.
[69] G. L. Lou, “Comparison of the efficacy of cyclophosphamide and Tripterygium wilfordii polyglycosides in the treatment of primary nephrotic syndrome in the middle-aged,” Zhejiang Journal of Combination of Chinese and Western Medicine, vol. 24, no. 9, pp. 792-793, 2018.
[70] M. Y. Zhu, “Effects of Tripterygium wilfordii polyglycosides combined with benazepril on renal function and serum immunoglobulin levels in elderly patients with primary nephrotic syndrome,” Anhui Medicine, vol. 24, no. 1, pp. 179–183, 2018.
[71] Z. Qian, “Efficacy of Tripterygium wilfordii polyglycosides combined with ramipril in the treatment of senile primary nephrotic syndrome,” Exploration of Rational Drug Use in China, vol. 16, no. 2, pp. 58-61, 2018.
[72] N. Xiaoli, “Of Tripterygium wilfordii polyglycosides combined with immunosuppressant in the treatment of primary nephrotic syndrome,” Chinese Journal of Metallurgical Industry Medicine, vol. 36, no. 6, p. 692, 2016.
[73] H. X. Xu and H. Zhou, “Efficacy of Tripterygium wilfordii combined with glucocorticoid in the treatment of patients with PNS,” Management of Health Standards in China, vol. 11, no. 4, pp. 108–110, 2016.
[74] J. Liangyan, “Clinical observation of Tripterygium wilfordii polyglycosides combined with low-dose prednisone in the treatment of senile primary nephrotic syndrome,” Strait Pharmacology, vol. 25, no. 2, pp. 76-77, 2016.
[75] C. Weiwei, “Clinical observation of Tripterygium wilfordii polyglycosides combined with medium-dose prednisone in the treatment of senile primary nephrotic syndrome,” World Journal of Integrated Traditional Chinese and Western Medicine, vol. 8, no. 10, pp. 1031–1033, 2017.
[76] C. Yuanshu, “Effect of Tripterygium wilfordii polyglycosides tablets on efficacy and inflammatory factors in patients with primary nephrotic syndrome,” Hainan Medical Science, vol. 29, no. 6, pp. 763–766, 2016.
[77] X. Junsan, “Clinical observation of Tripterygium wilfordii polyglycosides tablets in the treatment of senile primary nephropathy syndrome,” Guangming Traditional Chinese Medicine, vol. 32, no. 14, pp. 2060-2061, 2016.
[78] L. Weichao, “Evaluation of the efficacy of Tripterygium wilfordii polyglycosides in patients with recurrent primary nephrotic syndrome,” Asia-Pacific Traditional Medicine, vol. 9, no. 1, pp. 167-168, 2004.
[79] Z. Zhenzhong, “Clinical observation of low-dose prednisone combined with Tripterygium wilfordii polyglycosides in the treatment of senile primary nephrotic syndrome,” Current Diagnosis and Treatment, vol. 26, no. 21, pp. 4860-4861, 2015.
[80] L. Q. Li and K. Li, “Observation on the effect of Tripterygium wilfordii polyglycosides on primary nephrotic syndrome in middle-aged and elderly patients,” Chinese Journal of Clinical Health Care, vol. 18, no. 5, pp. 514–516, 2006.
[81] L. Jiping, “Observation on the effect of Tripterygium wilfordii polyglycosides on primary nephrotic syndrome in middle-aged and elderly patients,” Contemporary Medical Science, vol. 22, no. 18, pp. 135-136, 2009.
[82] X. L. Yang, “Effect of Tripterygium wilfordii polyglycosides combined with benazepril on elderly patients with primary membranous glomerulonephritis,” Study on Drug Evaluation, vol. 41, no. 2, pp. 259–262, 2006.
[83] L. N. Qu and Y. Chen, “Observation on the therapeutic effect of Tripterygium wilfordii polyglycosides combined with angiotensin II receptor antagonist in the treatment of idiopathic membranous nephropathy,” World Clinical Drugs, vol. 37, no. 3, pp. 194–198, 2016.
[84] L. Y. Mo and S. Jiang, “Clinical study of mycophenolate mofetil combined with Tripterygium wilfordii polyglycosides in the treatment of membranous nephropathy,” Internal Medicine, vol. 14, no. 3, pp. 307–309, 2015.
[85] D. H. Chen and M. Tan, “Clinical observation of Tripterygium wilfordii polyglycosides in the treatment of IgA nephropathy in children,” Guangdong Medical Science, vol. 39, no. S2, pp. 252-253, 2012.
[86] L. G. Zhang and J. Wang, “Effects of polyglycosides of Tripterygium wilfordii on antioxidant stress in rats with diabetic nephropathy,” Chinese Journal Of Pharmacology And Toxicology, vol. 3, no. 28, pp. 358–361, 2016.
[87] Z. Yuxia, “Effects of polyglycosides of Tripterygium wilfordii on antioxidant stress in rats with diabetic nephropathy,” Xinxiang: Xinxiang Medical College, vol. 23, no. 5, pp. 12–16, 2016.
[88] T. G. Feng, “Malnutrition in patients with chronic kidney disease,” Electronic Journal Of Tumor Metabolism And Nutrition, vol. 5, no. 4, pp. 436–439, 2011.
[89] L. Y. Xie and X. Ling, “Clinical research progress of traditional Chinese medicine in the treatment of chronic nephropathy,” New Traditional Chinese Medicine, vol. 11, no. 51, pp. 23–26, 2013.
[90] X. S. Meng and Q. Guo, “Research Progress on Compatibility and Toxicity Reduction of Polyglycosides of Tripterygium Wilfordii,” Haikou, Hainan, China, 2016.
[91] Z. D. Chen and P. G. Schlegel, “PG27, an extract of Tripterygium wilfordii hook f, induces antigen-specific tolerance.
in bone marrow transplantation in mice,” *Blood*, vol. 2, no. 95, pp. 33–38, 2007.

[92] Z. T. Sun, “Distribution characteristics of clinical adverse reactions of *Tripterygium wilfordii* and its preparations: a systematic review of randomized controlled trials,” *World Science and Technology-Modernization of Traditional Chinese Medicine*, vol. 9, no. 17, pp. 1899–1905, 2016.

[93] Y. X. Sun and D. Ma, “Meta analysis of reproductive toxicity in *Tripterygium wilfordii* users,” *Drug vigilance in China*, vol. 2, no. 11, pp. 94–99, 2012.

[94] F. W. Wu and Q. Jia, “A case of severe myelosuppression caused by *Tripterygium wilfordii* polyglycosides,” *Journal Of Clinical Rational Drug Use*, vol. 13, no. 12, pp. 78–79, 2016.