

# Research Progress of Shaofu Zhuyu Decoction in the Treatment of Male Diseases

Dong Bai<sup>1</sup>, Xiangning Luo<sup>2,\*</sup>

<sup>1</sup>Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China

<sup>2</sup>Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang 712000, Shaanxi, China

\*Correspondence Author

**Abstract:** *The effect of Shaofu Zhuyu Decoction is to promote blood circulation and remove blood stasis, warm menstruation, reduce swelling and relieve pain. Its main pathogenesis is cold coagulation and blood stasis. In the systematic collection and analysis of relevant literature in recent years, it has been found that it is widely used in the clinical and experimental research of male diseases, such as chronic prostatitis, epididymitis, prostate hyperplasia, erectile dysfunction, varicocele and infertility, etc. Especially for patients with prostatitis, experimental and clinical research data table, it has a significant curative effect. In the treatment of epididymitis, erectile dysfunction, varicose veins and infertility, there are also studies that it has a positive effect, but there are few relevant reports and more research is needed; the relevant content is summarized as follows.*

**Keywords:** Shaofu Zhuyu Decoction, Prostate, Epididymitis, VC, ED.

## 1. Introduction

Shaofu Zhuyu Decoction comes from the famous doctor Wang Qingren's "Medical Forest Correction" in the Qing Dynasty, which records that "this formula treats the pain of abdominal lumps, or lumps without pain, or pain without lumps, or abdominal distension", with the effect of warming menstruation, dispersing cold, activating blood circulation, removing blood stasis and relieving pain. Clinically, it is widely used in the treatment of gynaecological diseases and is known as "the first formula for regulating menstruation". The etiology of gynecological diseases is mostly stagnation of blood stasis in the lower jiao, so many scholars have also adopted Shaofu Zhuyu Tang for treatment and achieved remarkable efficacy in clinical treatment, and now we will review and summarise the research on the application of Shaofu Zhuyu Tang in gynecological diseases.

## 2. Formulation Analysis

### 2.1 Drug Composition and Formulae

The original formula of Shaofu Zhuyu Decoction is composed of 1.5g of cumin (fried), 3g of dried ginger (fried), 3g of Guan Gui (official cinnamon), 9g of Angelica sinensis, 6g of Rhizoma Ligustici Chuanxiong, 6g of Radix Paeoniae Alba, 6g of Myrrh (grounded), 9g of Pu Huang (cattail), 6g of Wuling Lipstick (fried), 3g of Yanhuosuo. Among them, Angelica Sinensis, Radix Paeoniae Alba and Rhizoma Ligustici Chuanxiong can nourish and invigorate blood, regulate menstruation and remove blood stasis. Yanhuosuo and myrrh can promote qi and disperse blood stasis. Wu Ling Yi and Pu Huang can activate Blood circulation and remove blood stasis to disperse knots and relieve pain. When used raw, Pu Huang focuses on activating Blood circulation and removing Blood stasis, while when used fried, Ling Zhi focuses on relieving pain without damaging Stomach Qi. Fennel, dry ginger and cinnamon are enough to warm the menstruation, disperse cold, regulate qi and relieve pain so as to reach the lower jiao, and the whole formula takes into account both qi and blood, and warms and passes through in parallel [1].

## 3. Pharmacological Effects

### 3.1 Anti-inflammatory

A number of studies have illustrated the anti-inflammatory effect of Shaofu Zhuyu Decoction, Hong Jinni studied the effect of Shaofu Zhuyu Decoction on Nod-like receptor protein 3 (NLRP3) inflammatory vesicles in tubal inflammatory infertility rats, and it was observed that Shaofu Zhuyu Decoction significantly reduced the levels of NLRP3 protein and the mRNA content of NLRP3, IL-1 $\beta$ , IL-6, and TNF- $\alpha$  in the oviductal tissue [2]. Lu Ying et al. explored the inflammatory microenvironment and mechanism of action of flavoured Shaofu Zhuyu Decoction on endometriosis rats and observed that flavoured Shaofu Zhuyu Decoction could reduce the levels of IL-1 $\beta$ , IL-6, and TNF- $\alpha$  significantly [3]. Fu Zemei et al. selected 118 patients with sequelae of pelvic inflammatory disease-chronic pelvic pain (SPID-CPP) with cold-dampness stagnation and randomly divided them into 58 cases each in the control group and the observation group according to the numerical table method, and observed that Jiawei Shaofu Zhuyu Decoction could significantly inhibit the expression of patients' levels of pro-inflammatory factors TNF- $\alpha$ , IL-6, IL-8, and ICAM-1 after the administration of the medication, thus promoting the sequelae of pelvic inflammatory disease and thus promote the healing of pelvic inflammatory disease [4]. This indicates that Shaofu Zhuyu Decoction can inhibit the release of inflammatory substances, and has a significant inhibitory effect on non-specific inflammatory reactions and proliferative chronic inflammatory reactions.

### 3.2 Anticoagulation

Some researchers have observed that Shaofu Zhuyu Tang can change the blood rheology of the organism by reducing whole blood viscosity and plasma viscosity, and also improve the function of platelets by inhibiting platelet adhesion, aggregation, and release, in order to alleviate the state of blood stasis [5]. It has also been indicated that Shaofu Zhuyu Tang can improve the oxidative stress state of the organism through antioxidant effects, thus preventing the formation of thrombus

[6]. Su Shulan found that the combined decoction of Pu Huang-Wu Ling Lipid has the effect of anti-platelet aggregation and prolongation of thrombin activity, and its effect is better than that of single decoction of Pu Huang and Wu Ling Lipid [7]. Some scholars have also found that Shaofu Zhuyu Decoction can improve the metabolism of amino acids and energy by regulating asparagine, glutamate, ribitol and other substances, so as to alleviate the state of blood stasis in the organism [8].

### 3.3 Antispasmodic

Shaofu Zhuyu Decoction has an antispasmodic effect, and some studies have pointed out that it has a certain relieving effect on uterine contraction, which can inhibit the tension of uterine smooth muscle contraction, and by regulating the level of PGE<sub>2</sub>/PGF<sub>2a</sub> content, the spasm can be lifted [9]. It has also been suggested that Shaofu Zhuyu Decoction can regulate the diastolic and contractile functions of blood vessels and alleviate the state of vasospasm by regulating the levels of ET-1/NO and TXA<sub>2</sub>/PGI<sub>2</sub> ratio content [10][11].

### 3.4 Pain Relief

Some studies have shown that Shaofu Zhuyu Decoction has a certain relieving effect on inflammatory pain, and it can relieve pain symptoms by reducing the level of inflammatory factor content [12]. At the same time, Shaofu Zhuyu Decoction can also effectively improve the body's haemodynamics, through the regulation of the body's content levels of thromboxane (TXA<sub>2</sub>), prostaglandins (PGI<sub>2</sub>) and other content levels, so that the constriction of spasticity of blood vessels has been significantly relieved. To achieve analgesic effects [13][14]. It has also been shown that the main components in Shaofu Zhuyu Decoction, including quercetin, isorhamnetin and eugenol, which are involved in physiological mechanisms such as dopamine receptor activation, eNOS activation, and VEGFA-VEGFR signalling pathway by affecting the estrogen receptor ESR1, the cannabinoid receptor CNR1, and calreticulin 1CALM1, etc., and thus achieve the treatment of primary dysmenorrhoea [15]. A study on the treatment of primary dysmenorrhoea with Shaofu Zhuyu Decoction also confirmed the positive effect of this drug in relieving the symptoms of patients with dysmenorrhoea [16]. The analgesic effect of *Angelica sinensis* and *Paeonia lactiflora sinensis* used in combination was better than that of the other drugs in Shaofu Zhuyu Decoction [17].

### 3.5 Regulation of Reproductive Hormones

Studies have shown that Shaofu Zhuyu Decoction has a regulating effect on progesterone, estrogen, and prostaglandin E<sub>2</sub> in patients with primary dysmenorrhoea, and Cong Xiaoxiao et al. observed that Shaobuyu Tang was able to play a lowering effect on estrogen during menstruation and an elevating effect on progesterone and prostaglandin E<sub>2</sub> [18]. Some studies have also shown that Shaofu Zhuyu Decoction can significantly improve hormonal indicators such as estradiol (E<sub>2</sub>), follicle stimulating hormone, progesterone, luteinising hormone (LH), and estradiol (E<sub>2</sub>) [19]. Yu Conghui et al. observed that Shaofu Zhuyu Decoction could play a role in increasing the content of luteinising hormone

levels in patients with polycystic ovary syndrome, as well as decreasing the content levels of TNF- $\alpha$ , IL-2 and IFN- $\gamma$  [20].

### 3.6 Regulation of Immunity

Relevant studies have shown that Shaofu Zhuyu Decoction can regulate the immune function of the body, and Chu Dongmei et al. found that Shaofu Zhuyu Decoction can enhance the immune function by lowering the levels of serum immunoglobulins (Ig M, Ig A and Ig G) and serum inflammatory factors (TNF- $\alpha$ , IL-8 and HO-1) in the body [21]. Zhang Haiyan et al. observed that the combination of Shaofu Zhuyu Decoction with Gui Zhi Fu Ling Tang was able to reduce serum immunoglobulin Ig M, Ig A and Ig G levels in patients with chronic pelvic inflammatory disease, thus increasing the immune function of the organism [22]. Some scholars have also found that Shaofu Zhuyu Decoction can reduce the level of monocyte chemotactic protein-1, thus enhancing the immune function of the body [23].

## 4. Clinical Applications

### 4.1 Application in Chronic Prostatitis Syndrome

Traditional Chinese medicine attributes chronic prostatitis to the categories of leucorrhoea and leucorrhoea, which are considered to have a pathogenesis of deficiency, with the core of the disease being "stasis". Its core lies in the "stasis", and the treatment should be mainly to "pass" [24]. Shaofu Zhuyu Decoction has the effect of activating blood circulation, removing blood stasis and moving qi, and it can hit the disease mechanism, so it is used effectively. Shao Yaoning observed the therapeutic effect of 84 cases of cold-congealed and blood-stasis type chronic prostatitis patients treated with Prostat Shutong capsule and Shaofu Zhuyu Decoction, and the total effective rate of Shaofu Zhuyu Decoction was 90.48%, which was significantly higher than that of Prostat Shutong with an overall effective rate of 71.43%, indicating that Shaofu Zhuyu Decoction Tang has a good therapeutic effect on prostatitis [25]. Han Fuqian et al. studied 112 patients with chronic prostatitis and observed that the combination of acupuncture with Shaofu Zhuyu Decoction could significantly reduce the levels of TNF- $\alpha$ , IL-6, and NGF in patients and was better than that of the acupuncture group ( $P < 0.05$ ), which indicated that the combination of acupuncture with Shaofu Zhuyu Decoction had a good anti-inflammatory effect, and at the same time, it was observed that the combination of acupuncture with Shaofu Zhuyu Decoction could effectively alleviate the patients' pain symptoms and the condition of the urinary tract, and the effect was better than that of the acupuncture group ( $P < 0.05$ ), which also indicated that the combined TCM group had definite efficacy in relieving patients' pain and improving their quality of life [26]. Deng Guoyan treated 159 patients with chronic prostatitis of the qi stagnation and blood stasis type with a self-proposed formula consisting of Bazheng San plus Shaofu Zhuyu Decoction, and after 2 months of treatment, the results showed an overall effective rate of 94.97% (151/159), and a significant decrease in the number of leukocytes in the patients' prostate fluids was observed, which demonstrated that the formula of promoting qi, activating blood stasis, and eliminating inflammation had a good effect on anti-inflammatory properties [27]. Wang Dinghai et al.

observed 174 patients with chronic prostatitis were treated with tamsulosin hydrochloride extended-release capsules and tamsulosin combined with Shaofu Zhuyu Decoction with rectal administration of medication, and after 4 weeks of treatment, it was observed that Chinese medicine evidence points, NIH-CPSI points, as well as the counts of WBCs and lecithin microsomes in the combined group were significantly lower and better than those of the western medicine group, and the total effective rate in the combined group was 94.25%, while that in the western medicine group was 81.61%. The total effective rate was 94.25% in the combination group and 81.61% in the western medicine group. Therefore, this study concluded that the combination of Shaofu Zhuyu Decoction plus reduction and rectal administration of medicines is effective in the treatment of chronic prostatitis [28]. Professor Li Yuqing suggested that in the course of treating chronic prostatitis, the Qing method is often applied in the early stage to resolve internal heat. In the later stage, it is often due to the fact that dampness wins over yang and needs to use warm tonic method to enhance yang qi in the body, or due to the fact that stasis of blood is the main cause, then it is necessary to use the warm method to make it clear [29], and Professor Li Yi-Qing often chooses the Shao-abdomen by Shaofu Zhuyu Decoction with additions and subtractions from the theory of blood stasis treatment [30]. Professor Li Haisong for this point of view is also agreed, it pointed out that chronic prostatitis early will obviously appear urinary urgency, urinary frequency, urethral fever and other symptoms of dampness and heat, at this time often more application of cypress, Zhimu and other heat and dampness medication. However, this kind of drugs are bitter cold, in the application of the body can often be damaged yang qi, the emergence of the lesser abdominal cold pain, at the same time, chronic prostatitis often long time to heal the condition of the disease into the easy to injure yang qi can also be seen. The pain in the abdomen can also be seen. In clinical treatment, Professor Li Haisong advocates activating blood circulation and removing blood stasis, warming yang and transforming qi, and he often uses Shaofu Zhuyu Decoction to treat this condition flexibly [31]. Modern studies have shown that prostatic fluid and semen of patients with chronic prostatitis contain a variety of inflammatory factors such as IL-6, IL-8, TNF- $\alpha$ , and IL-1 [32]. Several studies have also confirmed that Shaofu Zhuyu Decoction can reduce the inflammatory factors in the body. In the clinical application, the use of Shaofu Zhuyu Decoction to treat chronic prostatitis patients, in its blood circulation and blood stasis, warm menstruation dispersal of cold on the basis of can also be very good to alleviate the inflammatory state of the patient, so in the clinic has achieved a significant therapeutic effect. It is also important to note that the condition of patients with prostatitis is often complex and variable, and a single type of evidence is rare, mostly complex evidence, so the clinical use of Shaofu Zhuyu Decoction should be added and subtracted from other treatments.

#### 4.2 Use in Benign Prostatic Hyperplasia

Prostatic hyperplasia is mainly manifested as symptoms such as urinary frequency, urinary urgency, urinary waiting, difficulty in urination, and increased nocturia [33]. Prostatic hyperplasia can be categorised as retention of urine, seminal urine and frequent urination in traditional Chinese medicine (TCM), and TCM believes that the location of seminal urine is

in the bladder, and although the etiology of the disease is different, its pathogenesis is dominated by tangible blood stasis [34], so treatment is appropriate to use Plus Reducing Shaofu Zhuyu Decoction to eliminate blood stasis and dissipate stagnation in order to facilitate the lower jiao. Cui Wenchen observed 92 cases of prostatic hyperplasia patients with western medicine and western medicine combined with Shaofu Zhuyu Decoction Plus Flavour, if the patients had heavy dampness-heat, remove the dry ginger and cinnamon, add the heat-clearing medicines such as moutong, gardenia, plantain, talcum, etc., and when the qi is weak, remove the dry ginger and cinnamon, and add the tonic medicines such as astragalus, yam, and white atractylodes. After one month of treatment, it was observed that the total effective rate of western medicine combined with Shaofu Zhuyu Decoction Plus flavour was 100%; the total effective rate of western medicine alone was 93.48%, and it was also observed that Shaofu Zhuyu Decoction Plus flavour could effectively alleviate the clinical symptoms of patients, such as difficulty in urination, thin urine line, etc., and also reduce the size of the prostate, and the study showed that the combined use of Shaofu Zhuyu Decoction Plus flavour and western medicine was better than that of western medicine alone for the treatment of prostatic hyperplasia [35]. The study showed that the effect of using Shaofu Zhuyu Decoction plus flavour in combination with western medicines in the treatment of prostate hyperplasia is better than that of western medicines alone [35]. Electrocision of the prostate is a commonly used method for treating prostatic hyperplasia, which is widely used in diseases of the prostate [36]. However, surgery inevitably damages the human body, and patients are prone to conditions such as bladder spasms, infections, and postoperative bleeding after surgery, which usually affects their recovery [37]. Modern medicine combined with traditional Chinese medicine is effective in treating and alleviating post-prostatectomy complications [38]. Bladder spasm after prostatectomy is characterised by painful bladder spasm and urgency to urinate. Traditional Chinese medicine believes that the core of this disease is cold condensation and blood stasis [39]. Shaofu Zhuyu Decoction has the effect of warming yang and activating blood, which can effectively relieve the symptoms of bladder spasm. Chen Yin observed 100 cases of patients who needed to undergo prostate electrocutaneous cystectomy, and firstly, they were randomly divided into 2 groups, the treatment group was enucleated with Shaofu Zhuyu Decoction before and after the operation, and the control group used Tolterodine tartrate, and it was observed that Shaofu Zhuyu Decoction was able to reduce the incidence of bladder spasms effectively, 12h and 24h after the operation, ( $P>0.01$ ,  $P<0.05$ ) [40]. Guo Hua studied 102 patients with bladder spasms after prostatic hyperplasia surgery and randomly divided the patients into two groups, and after anti-infecting them, the control group used Tolterodine tablets, while the treatment group used Shaofu Zhuyu Decoction, and after a period of treatment, it was observed that the number of bladder spasms and the time of bladder spasms and haematuria in the treatment group were improved relative to that in the control group. It showed that Shaofu Zhuyu Decoction could effectively treat bladder spasms [41]. Relevant animal experiments have shown that Pu Huang granules can inhibit the proliferation of prostate cells and resist the hyperplasia of their prostate in mice, by reducing the antigenic content of nuclear protein (Ki67) and

sialic acid protein (CD43) in prostate tissues [42]. There are also experiments in the use of testosterone propionate-caused mouse prostate hyperplasia model to observe the effect of Pu Huang granules on it, through the sernidone as a control group, the results show that the high dose group of Pu Huang mice prostate wet mass and serum testosterone levels decreased significantly, and the efficacy is comparable to sernidone, the results show that the high dose group of Pu Huang mice prostate wet mass and serum testosterone levels decreased significantly, and the effect is comparable to the sernidone, indicating that the Pu Huang Granules have an inhibitory effect on the hyperplasia of mouse prostate, and the mechanism is related to the reduction of serum testosterone content level [43].

### 4.3 Epididymitis

The pathogenesis of epididymitis is complex and diverse, and the types are mainly acute and chronic, with chronic being common, which is mainly manifested as swelling and pain in the scrotum and aggravation when standing [44]. Traditional medicine does not have the name of epididymitis, but classifies it as subcarbuncle. Chinese medicine says that subcarbuncle is closely related to liver and kidney [45]. Modern medical doctors believe that subcarbuncles are hot and solid in the acute stage, and in the chronic stage, they are mixed with deficiency and solid, and cold and heat [46]. Chen Snap, et al. randomly divided 60 patients with chronic epididymitis of the qi stagnation and blood stasis type into 2 groups, the treatment group used the combination of the Xiaoyao San and Shaofu Zhuyu Decoction, while the control group used the levofloxacin, and after a period of time of treatment, it was observed that the extent of swelling of the epididymal testes, the size of the swelling, and the symptoms of pain in the testes accompanied by chest and hypochondrium distension were improved in the treatment group relative to the control group, which indicates that the combination of the Xiaoyao San and the Shaofu Zhuyu Decoction is able to treat the chronic chronic epididymitis of the qi stagnation and blood stasis type effectively [47]. epididymitis [47]. Professor Jia Liu jin also believed that stagnant heat is the pathogenesis of acute epididymitis, meanwhile, epididymis and testis belong to the lesser abdomen, which is the same as the treatment site of Shaofu Zhuyu Decoction, so the treatment of carbuncle is often based on the combination of Liumiao Tang and Shaofu Zhuyu Decoction, with addition and subtraction of chemically modified, Liumiao Tang is used for clearing damp-heat and Shaofu Zhuyu Decoction is used for invigorating blood and removing blood stasis, meanwhile, Jia paid attention to the identification of the evidence, such as if patients with severe cold symptoms, then increase the use of fennel, Ganjiang and cinnamon to warm up the interior and dissipate the cold, and for severe heat, then reuse Liumiao San. If the symptoms of blood stasis are severe, more drugs such as Angelica sinensis and Rhizoma Ligustici Chuanxiong are used to activate blood circulation and remove blood stasis [48].

### 4.4 Varicocele and Infertility

Varicocele is an abnormal elongation, dilatation and tortuosity of the trailing venous plexus of the internal spermatic veins, with a higher incidence of varicocele in the

infertile male population [49]. The main mechanisms associated with the occurrence of varicocele are blood stagnation in the venous plexus of the internal spermatic cord, impaired microcirculation in the testes, and increased temperature in the scrotum, which affects the spermatogenic function of the testes [50]. Traditional Chinese medicine (TCM) does not have the name of varicocele infertility, and there are only records related to male infertility and varicocele, which are classified as fasciomas and other categories, and TCM believes that its core pathogenesis is blood stasis [51]. For the infertility caused by it, the view that blood stasis is predominant has also been formed [52]. The application of Shaofu Zhuyu Decoction can not only improve blood reflux, but also regulate the microenvironment of the testis to improve semen quality and enhance reproductive function. Sun Weiguo et al. selected 30 cases of varicocele infertility, all of which were treated with microscopic technology of spermatic vein ligation, and given Shaofu Zhuyu Decoction with additions and subtractions after the operation, and were followed up for 1-4 years after the operation. The results were that the distension and pain were significantly reduced, the recovery time was shortened, and the quality of spermatozoa was improved in 25 cases, with a validity rate of 83.33%, and the number of cases who had children was increased to 8 within 1 year, and 14 cases who had children in 2-4 years. The effective rate was 83.33%. 8 cases gave birth within 1 year and 14 cases gave birth within 2~4 years after the operation. 22 cases gave birth after the treatment, and the effective rate was 73.33%. It is believed that the combination of Shaofu Zhuyu Decoction with microtechnology spermatic vein ligation can be effective for varicocele infertility, and its surgery can improve sperm viability and so on, but it is ineffective for the preoperative and postoperative distension and pain and discomfort in the local area, while the addition and subtraction of Shaofu Zhuyu Decoction can improve the preoperative distention and pain and postoperative discomfort of spermatic ligation and so on effectively [53]. Wang Penglin selected 78 cases of varicocele combined with weak and oligozoospermia to be treated with the addition and subtraction of Shaofu Zhuyu Decoction, and at the same time, repeated circular massage along the groin from the bottom to the top, with one treatment cycle of three months. After the treatment, the results showed that the total effective rate was 87.18%, which demonstrated the good effect of the combination of Shaofu Zhuyu Decoction plus reduction and massage in the treatment of varicocele combined with weak and oligozoospermia [54]. Semen non-liquefaction is also one of the most important reasons for men's infertility. Semen non-liquefaction can be attributed to "semen cold", "semen heat", "semen stasis", etc., which is associated with stagnation in Chinese medicine, The Chinese medicine believes that it is related to stagnation, dampness and turbidity, and the imbalance of yin and yang in the liver, spleen and kidney. Liver, spleen and kidney yin and yang disorders, or turbid and stagnant toxin obstruction leads to qi and transformation disorder, and semen non-liquefaction occurs [55]. Tian Yuhe used Shaofu Zhuyu Decoction to treat patients with semen non-liquefaction, and after 1 to 2 courses of treatment, it was observed that semen routine was normal in 11 patients, effective in 6 patients, and ineffective in 3. The effective rate of treatment was 85% [56].

### 4.5 Erectile Dysfunction

The etiology of erectile dysfunction is complex and often due to multiple causes [44]. Modern medicine believes that vascular endothelial damage is an important pathogenesis of diabetes-induced erectile dysfunction [57]. Traditional medicine classifies diabetic erectile dysfunction as thirst-quenching variant, which is impotence complicated by thirst-quenching disease. Chinese medicine believes that blood stasis occurs throughout this disease [58]. Shaofu Zhuyu Decoction has the effect of warming yang and activating blood, and is often applied to patients with blood stasis-type impotence, thus being able to improve penile blood circulation while warming yang qi. Jia Xiaoyue et al. treated 82 patients with diabetic erectile dysfunction of the qi stagnation and blood stasis type in groups, and patients in each group received diabetic dietary education and sexual life guidance. The control group was additionally treated with sildenafil alone, while the observation group received a combination of sildenafil and Shaofu Zhuyu Decoction. 8 weeks of treatment revealed that the combination of sildenafil and Shaofu Zhuyu Decoction could significantly reduce serum Hcy, ET-1, and NO levels, and the effect was significantly better than that of sildenafil alone ( $P < 0.05$ ), indicating that the combination of sildenafil and Shaofu Zhuyu Decoction could well improve erectile dysfunction in diabetic patients with qi stagnation and blood stasis. This indicates that the combination of sildenafil and Shaofu Zhuyu Decoction can improve the vascular factors of erectile dysfunction [59], and some animal experiments have shown that Shaofu Zhuyu Decoction can significantly improve the erectile function of DMED rats by altering the plasminogen (PT) and fibrinogen (FIB) in rats [60]. Relevant studies have shown that the prevalence of erectile dysfunction in peritoneal dialysis patients in China is high [61], in the study of Shaofu Zhuyu Decoction combined with low-dose tadalafil for the treatment of erectile dysfunction (ED) in peritoneal dialysis patients, the control group was given low-dose tadalafil treatment, and the observation group was given Shaofu Zhuyu Decoction on the basis of the control group. The treatment time was 30 d. The result was that the combined group could effectively improve penile haemodynamics and oxidative stress status [62].

## 5. Discussion

Blood stasis is an important pathological factor in male diseases, and it also accompanies the development process of many male diseases, such as prostate hyperplasia, varicocele, erectile dysfunction and other diseases, and clinically, for the related diseases leading to the pelvic cavity and local perineal pulling pain symptoms, Western medical treatment often fails to achieve the therapeutic effect, and at this time, Shaofu Zhuyu Decoction is also able to effectively alleviate the problem through its anti-inflammatory, blood circulation and pain relieving effects. As a classic formula, experimental studies have been conducted to investigate the effects of Shaofu Zhuyu Decoction and found that it has anti-inflammatory, blood-activating, pain-relieving and spasm-relieving properties, which are helpful in the treatment of men's illnesses. From the modern pharmacological effects of Shaofu Zhuyu Decoction, it can be seen that it may have a good effect on overactive bladder, because Shaofu Zhuyu Decoction has the effect of regulating spasms, which may inhibit overactive bladder, but more research is needed in this

area. So far, the application of Shaofu Zhuyu Decoction in male diseases has been widely reported, but the research on epididymitis, erectile dysfunction, varicocele, and infertility has not yet been reported, and more studies need to be carried out. At the same time, there are still fewer studies on the mechanism of Shaofu Zhuyu Decoction for treating male diseases, and more research is needed in this area as well.

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