

# *Clinical Efficacy of Man-made Qingmu Soup in Treating Patients with Dry Eyes of Wind-heat in Liver Meridian and Its Impact on Relevant Indicators in Tears*

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**Abstract:** Liver meridian wind heat type dry eye is the main type of dry eye syndrome, with a long disease cycle. In traditional Chinese medicine, treatment needs to be carried out from aspects such as clearing heat, nourishing yin and dispersing blood stasis. This study mainly explores the specific effects of using self-designed Qingmu Tang to treat liver meridian wind heat type dry eye patients in clinical practice, and analyzes its effect on patient tear IL-1, following a comparative clinical treatment approach  $\beta$ , TNF-  $\alpha$ , Improvement in MMP-9 levels and other factors.

## **1. Introduction**

Dry eyes are more common in clinical practice, and there are many factors that can cause dry eyes, such as wearing contact lenses, long-term sleep deprivation, and living in excessively dry environments. Patients with dry eye may experience symptoms such as eye irritation, eyeburning or itching, sticky mucus in or around the eyes, sensitivity to light, redness in the eyes, globus sensation in the eyes, blurred vision, or eye fatigue<sup>[1]</sup>. Dry eyes can to some extent affect patients' daily life and work. Therefore, patients with dry eyes need to receive corresponding treatment. In this study, patients were treated with man-made Qingmu Soup. The detailed research content is described below.

## **2. Information and Methods**

### **2.1. General Information**

80 patients with dry eyes of wind-heat in liver meridian who were treated in our hospital from July 2022 to July 2023 was selected as the subjects of this study. They were randomly divided into the experimental group and the control group with 40 patients in both groups. There were 22 male patients and 18 female patients in the experimental group with an age range of 21-65 years old and an average age of  $(40.76 \pm 1.65)$  years old. And there were 23 male patients and 17 female patients in the control group with an age range of 22-67 years old and an average age of  $(41.58 \pm 1.73)$  years old. The general information in two groups of patients were compared, and  $p > 0.05$ .

This study has been approved by the Medical Ethics Committee of our hospital, and all patients have been informed of and been consent to the research content. Inclusion criteria: (1) Patients are classified as wind-heat in liver meridian through traditional Chinese medicine differentiation; (2) Patients can cooperate to complete the entire study; (3) Patients are not allergic to the medication used. Exclusion criteria: (1) Patients have undergone eye surgery within the past 3 months; (2) Patients have mental illness and cognitive impairment; (3) Patients have rheumatoid disease.

## 2.2. Methods

The patients in the control group were treated with Western medicine, that is, they were treated with Sodium Hyaluronate Eye Drops (Manufacturer: Chengdu Pushi Pharmaceutical Co., Ltd., National Drug Approval Number: H20183444), three times a day. On the basis of the control group, patients in the experimental group were treated with man-made Qingmu Soup. The prescription included 8g licorice, 12g *Scutellaria baicalensis* Georgi, 6g *Schizonepeta spica*, 6g *Saposhnikovia divaricata*, 8g Cicada clothing, 10g mulberry leaves, 10g *Buddleja officinalis* Maxim, 10g Baixianli, 10g Chuchrysanthemum, 10g Cassia seed, 10g *Forsythia suspensa*, 10g Manjingzi, and 10g *Lonicera japonica*. The patients took one dose daily and decocted with water in the morning and evening. After each medication, patients can also use gauze to take a small amount of traditional Chinese medicine soup to fumigate and wash the affected eye area, lasting for a month.

## 2.3. Observation indicators

Indicators, such as clinical efficacy, eye symptom indicators, tear IL-1 $\beta$ , TNF- $\alpha$ , and MMP-9 level, in two groups of patients are observed. Clinical efficacy is divided into significance, effectiveness, and ineffectiveness. The total effective rate is the sum of significance and effectiveness rates. The indicator of significance efficacy is the patient's cornea returning to be normal with multiple SIT measurements greater than 10mm/5min. The effectiveness indicator is a decrease in corneal staining in patients and an increase in the results of multiple SIT measurements. The ineffectiveness indicator is that the patient's symptoms have not decreased [2]. Eye symptom indicators include FL (corneal fluorescence staining), BUT (tear break-up time), SIT (lacrima secretion test I), and OSDI (ocular surface disease index).

## 2.4. Statistical methods

The research data were analyzed by SPSS 26.0 software, and the counting data were expressed as percentages. The chi square value was used as the research test value, the measurement data was expressed as mean  $\pm$  standard deviation, and the t-value was used as the research test value. If  $p < 0.05$  is obtained, it indicates that there is statistical significance between the research data.

## 3. Results

### 3.1. Clinical efficacy between two groups of patients

Table 1: Clinical efficacy rates between two groups of patients [n, (%)]

Group	Case	Significance	Effectiveness	Ineffectiveness	Total efficacy
Experimental group	40	18(45.00)	20(50.00)	2(5.00)	38(95.00)
Control group	40	16(40.00)	19(47.50)	5(12.5)	35(87.50)
$\chi^2$	-	2.167	2.986	10.765	10.765
P	-	0.052	0.051	0.001	0.001

The total efficacy of clinical treatment in the experimental group was higher than that in the control group ( $p < 0.05$ ). The specific data is shown in Table 1.

### 3.2. Eye symptom indicators between two groups of patients

The SIT and BUT of patients in the experimental group were higher than those in the control group, while OSDI and FL of patients in the experimental group were lower than those in the control group ( $p < 0.05$ ). The specific data are shown in Table 2.

Table 2: Eye symptom indicators between two groups of patients ( $\bar{x} \pm s$ )

Group	Case	SIT (mm/5min)	BUT (s)	OSDI (score)	FL (score)
Experimental group	40	3.62±1.15	4.60±1.32	36.92±8.21	5.31±1.40
Control group	40	3.72±1.25	4.52±1.21	37.56±8.18	5.20±1.54
<i>t</i>	-	9.663	9.146	9.113	9.086
P	-	0.001	0.001	0.001	0.001

### 3.3. Tear IL-1 $\beta$ , TNF- $\alpha$ , and MMP-9 level between two groups of patients

Tear IL-1 $\beta$ , TNF- $\alpha$ , and MMP-9 level of patients in experimental group were lower than that in control group ( $p < 0.05$ ). The specific data are shown in Table 3.

Table 3: Tear IL-1 $\beta$ , TNF- $\alpha$ , and MMP-9 level between two groups of patients ( $\bar{x} \pm s$ )

Group	Case	IL-1 $\beta$ (ng/L)	TNF- $\alpha$ (ng/L)	MMP-9 (ng/mL)
Experimental group	40	50.16±9.21	150.94±52.48	25.95±4.15
Control group	40	79.30±10.82	353.75±100.35	36.18±5.46
<i>t</i>	-	10.865	12.865	10.249
P	-	0.001	0.001	0.001

## 4. Discussion

Dry eye has a high incidence rate in clinical practice. The disease is caused by abnormal tear dynamics and quality under the influence of various reasons, and it causes damage to the eye surface, and the tear film becomes unstable [3]. Disease of dry eye has a complex pathogenesis. If patients cannot receive timely and effective treatment, their condition will continue to be worsened, leading to more severe corneal ulcers. Unfortunately, patients' vision will be seriously affected and patients may even lose their sight [4].

Clinical studies have shown that the main reason for the appearance of dry eyes is the lack of stability of the tear film. Therefore, the treatment of dry eye diseases needs to focus on the reshaping of healthy tear films to the greatest extent possible, so that the self-repairing environment of damaged eye epithelial cells in patients can be effectively improved, and the repair speed can be further accelerated [5]. At present, Western medicine mainly uses local eye drops to treat patients with dry eye. Sodium Hyaluronate Eye Drops are commonly used as a treatment for dry eye, and its effective component is sodium hyaluronate that can bind to fibronectin, which can promote the connection and growth of epithelial cells. And sodium hyaluronate molecules contain many water molecules, so it has good water retention, which can further promote the healing of corneal trauma and effectively promote the growth of corneal epithelium. Western medicine treatment of dry eyes can improve patients' clinical symptoms to some extent, but the overall treatment effect is not ideal.

The causes of dry eye syndrome in traditional Chinese medicine are blood stasis, yin deficiency, dryness and heat, loss of fluid, and damage to blood. Therefore, traditional Chinese medicine

treatment of dry eye syndrome needs to pay attention to nourishing yin, dispersing blood stasis, and clearing heat and detoxifying [6]. In this study, patients with dry eyes were treated with man-made Qingmu Soup. Among them, *Lonicera japonica* can reduce inflammation, swell, clear heat, and detoxify. *Manjingzi* can play a role in joint dehumidification, clearing the head, and dispersing wind heat. *Forsythia suspensa* can reduce swelling, disperse nodules, detoxify, and clear heat. *Cassia seed* can moisten the intestines, defecate, clear the liver, and brighten the eyes. *Chuchrysanthemum* can protect the liver, brighten the eyes, relax tendons, and promote blood circulation, dissipate heat and detoxify. *Baixianli* can dispel wind and brighten the eyes, calm the liver and relieve depression. *Buddleja officinalis* Maxim can nourish liver and improve eyesight, clear heat and purge fire. *Mulberry leaves* can clear the lungs and moisten dryness, clear the liver and brighten the eyes, and disperse wind and heat. *Cicada clothing* can also calm the wind and stop spasms, clear the eyes and reduce cloudiness, promote throat opening, and disperse wind and heat. *Saposhnikovia divaricata* can overcome dampness, relieve pain, and dispel wind and relieve external heat. *Schizonepeta spica* can clear the eyes, dispel the surface and disperse the wind. *Scutellaria baicalensis* Georgi can stop bleeding, eliminate dampness and heat, and relieve excess heat. And licorice can regulate various herbs and effectively treat dry eyes.

There are relevant clinical studies indicating a significant correlation between inflammatory response and dry eye, IL-1  $\beta$  And TNF-  $\alpha$  Both are important inflammatory factors related to dry eyes, and an increase in their levels indicates a more severe ocular surface inflammatory response in patients, which further exacerbates the condition of dry eyes. In addition, relevant studies have shown that the levels of MMP-9 in patients with dry eyes are higher than those in healthy individuals. MMP-9 is a proteolytic enzyme that occurs when eye surface cells undergo stress reactions or are stimulated by inflammation. Elevated levels of MMP-9 will seriously damage the corneal stromal cells of patients, further exacerbating their condition. The results of this study indicate that the total clinical treatment efficacy of patients in the experimental group is higher than that in the control group. The SIT and BUT of patients in the experimental group were higher than those in the control group, while OSDI and FL of patients in the experimental group were lower than those in the control group. Tear IL-1  $\beta$ , TNF-  $\alpha$ , and the level of MMP-9 of patients in experimental group was lower than that in the control group, indicating that the treatment effect of man-made Qingmu Soup was better than that of single Sodium Hyaluronate Eye Drops.

It can be concluded that reasonable man-made Qingmu Soup can effectively improve the clinical symptoms and abnormal indicators of patients with dry eyes in clinical practice. Such treatment method helps to significantly improve the overall clinical treatment efficiency of patients with dry eyes and facilitates patients' body recovery.

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