

Current Status of Clinical Application and Basic Research on *Draba nemerosa Hebecarpa Jujube Lung-Diarrhoea Soup*

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Abstract

The clinical application and basic research of *Draba nemerosa Hebecarpa jujube diarrhoea lung soup* focus on respiratory diseases and circulatory diseases, and its clinical application is more compared with the basic research, and *Draba nemerosa Hebecarpa jujube diarrhoea lung soup* is mostly used in the form of “*Draba nemerosa Hebecarpa Hebecarpa jujube diarrhoea lung soup* with additional subtractions or other formulas combining *Draba nemerosa Hebecarpa Hebecarpa Hebecarpa jujube diarrhoea lung soup*” in the clinical application. This article will focus on the main mechanisms of *Draba nemerosa Hebecarpa jujube diarrhoea lung soup* and its main components in the treatment of respiratory and circulatory diseases, and will give a review of the basic research on *Draba nemerosa Hebecarpa Hebecarpa jujube diarrhoea lung soup* as follows.

Keywords

Draba nemerosa Hebecarpa Jujube Laxative Lung Soup, Clinical Application, Basic Research

1. Introduction

Draba nemerosa Hebecarpa jujube diarrhoea lung soup is from Article 27 of “Jin Gui Yao Lue—Phlegm and Drinking Disease Pulse Evidence and Treatment XII” [1]: “When there is no rest from branch drinking, *Draba nemerosa Hebecarpa jujube diarrhoea lung soup* is the mainstay. It has been applied to phlegm-drinking, edema, wheezing, and many other related diseases. Modern research on *Draba nemerosa Hebecarpa jujube Lung Laxative Soup* focuses on the application of its mechanism of diarrhoea, asthma, diuresis and oedema in the treatment of vari-

ous respiratory and circulatory diseases, such as chronic heart failure [2], pleural effusion [3], pulmonary heart disease [4], and lung cancer combined with pleural effusion [5], pleurisy [6], etc., which are water evils that offend the lungs and congestion of the qi, and the symptoms of coughing, wheezing, chest tightness, shortness of breath, such as respiratory difficulties and limb oedema, and its effect is remarkable. Therefore, this article is divided into clinical application and basic research as follows.

2. Clinical Application

2.1. Lung Abscess

Lung abscess is an anaerobic bacterial infection, causing lung tissue congestion and oedema, inflammatory cell infiltration, spread of inflammation, leading to tissue liquefaction and necrosis, and ultimately wrapped in granulation and fibrous tissue to form an abscess [7]. Chinese medicine believes that lung abscess belongs to the category of “lung carbuncle”, and the name of lung carbuncle was first seen in “The Essentials of the Golden Chamber”, and set up a special article on it. The “Poverty Essentials—lung impotence lung carbuncle cough on the gas disease pulse evidence treatment” said: “Cough and chest full vibration cold, pulse number, dry throat not thirsty, real out of the cloudy saliva chest smell, long time spit pus like rice porridge, for lung carbuncle.” The disease mechanism is due to the feeling of external evils, internal offence in the lung; or due to phlegm heat, treatment to clear heat and detoxification, blood stasis and pus as the rule of treatment. In *Draba nemerosa Hebecarpa* and jujube Lung Laxative Soup, *Draba nemerosa Hebecarpa* seeds can expel phlegm and jujube dates can nourish the heart and moisten the lungs, which can effectively alleviate the patient's cough and phlegm symptoms [8]. Modern pharmacological effects show that *Draba nemerosa Hebecarpa* has the effects of cough, expectorant, asthma and anti-inflammatory [9]. Zhang Tongmao *et al.* [10] found that quercetin and glucosyl gentiobioside, the index components of Southern *Draba nemerosa Hebecarpa*, can inhibit apoptosis of lung tissue cells by balancing the ratio of helper T cells 17 (Th17) and regulatory T cells (Treg) in peripheral blood. Wang Wenjing clinical observation found [11] that after the treatment of lung abscess patients with *Draba nemerosa Hebecarpa* big jujube diarrhoea lung soup, the total effective rate of the treatment group was significantly higher than that of the control group, and the levels of FVC and FEV1 of the treated patients were higher than that of the control group, which suggests that the *Draba nemerosa Hebecarpa* big jujube diarrhoea lung soup can be effective in the level of pulmonary function of the patients with lung abscess, and the therapeutic efficacy is more excellent. The serum levels of C-reactiveprotein (CRP), interleukin-8 (Interleukin, IL-8) and interleukin-2 (Interleukin, IL-2) were significantly lower than those of the control group, suggesting that *Draba nemerosa Hebecarpa* Jujube Lung Tang can effectively reduce the lung function level of patients with lung abscesses by lowering the levels of CRP, IL-8, and IL-2, and thus effectively reduce the lung

function level of patients with lung abscesses by lowering the levels of FVC, FEV and FEV of patients with lung abscesses. This suggests that *Dabanemerosa Hebecarpa* Dazao Lung Laxative Soup can reduce CRP, IL-8 and IL-2, and then effectively reduce the degree of inflammatory reaction in patients with lung abscess, and improve their clinical symptoms.

2.2. Bronchial Asthma

Studies have found that most patients with bronchial asthma are prone to type II respiratory failure, resulting in a series of symptoms such as shortness of breath, chest tightness and coughing, which, with the further development of the disease, can seriously jeopardise the patient's life [12]. In Chinese medicine, bronchial asthma is categorised as “croup”, and it is believed that phlegm and qi obstruction and congestion of the airways are the main factors that cause the disease, and that the above factors work together to cause malfunction of the lung qi, resulting in the appearance of related symptoms. With the development and improvement of the clinical application of Chinese medicine, the efficacy of Chinese medicine in the treatment of bronchial asthma is remarkable. Therefore, resolving phlegm and calming asthma, clearing heat and relieving symptoms are the starting point and fundamental purpose of TCM in the treatment of bronchial asthma. In the treatment of bronchial asthma, the composition of *Draba nemerosa Hebecarpa*, Dazaojiao Lung Laxative Soup, *Draba nemerosa Hebecarpa*, has the function of *Draba nemerosa Hebecarpa Hebecarpa* to expel the lungs and lower the rebelliousness, to diuretically eliminate the phlegm and suppress the cough and calm the asthma; Dazaojiao replenishes the middle qi and helps the spleen to benefit the lung. Yang Yun *et al.* [13] found that the decoction of *Draba nemerosa Hebecarpa* had a better effect of suppressing cough, expectorating phlegm and calming asthma in a mouse model of bronchial asthma. Modern pharmacological effects indicate that quercetin, the main active ingredient contained in *Draba nemerosa Hebecarpa*, is a kind of flavonoids, which can have an inhibitory effect on airway inflammation through the down-regulation of Interleukin-4 (Interleukin, IL-4) and Interleukin-5 (Interleukin, IL-5), and then to achieve the therapeutic effect of asthma [14]. Xia Xiaohui's clinical observation found [15] that after the treatment of Gabi *Draba nemerosa* Dazao Diarrhoea Lung Soup, the lung function FVC, FEV1, FEV1/FVC of the treatment group was higher than that of the observation group. This suggests that the treatment of bronchial asthma patients with *Draba nemerosa Hebecarpa* jujube lung laxative soup can effectively improve their lung function and improve their prognosis.

2.3. Bronchopneumonia

Paediatric bronchopneumonia is mainly caused by bacteria, viruses and other pathogenic microorganisms, which can destroy the lymphatic system, lung tissue, resulting in abnormal lymphocyte levels, decreased immunity, etc. [16].

Traditional Chinese medicine believes that paediatric bronchopneumonia belongs to the category of “cough”, the child is vulnerable to external invasion, resulting in an imbalance in the function of the internal organs, mostly phlegm-heat closure of the lungs, so the treatment should be to clear away the heat and resolve the phlegm, to open the lungs to stop the cough is the main. *Draba nemerosa Hebecarpa* jujube diarrhoea lung soup in the *Draba nemerosa Hebecarpa* diarrhoea lung phlegm; jujube to prevent *Draba nemerosa Hebecarpa* effect is too harsh and too much injury to the stomach qi, has the effect of tonifying the middle and benefiting the qi. Modern research has shown that *Draba nemerosa Hebecarpa* has the ability to down-regulate IL-4, IL-5, IL-8, IL-2, thus achieving anti-inflammatory effects [11] [14]. Clinical observation of Zhang Jinling showed [17] that the serum levels of IL-6, IL-8, and CRP of children with bronchopneumonia treated with *Dabanemerosa Hebecarpa* jujube diarrhoea lung soup were lower than those of children in the control group, suggesting that *Dabanemerosa Hebecarpa* jujube diarrhoea lung soup treatment of paediatric bronchopneumonia can reduce the levels of serum IL-6, IL-8, and CRP of children, thus inhibiting inflammatory reactions and alleviating the symptoms of paediatric bronchopneumonia patients.

2.4. Malignant Pleural Effusion in Advanced Stages of Lung Cancer

Malignant pleural effusion is one of the common complications of advanced lung cancer, mostly exudate, which is more common in advanced lung cancer, very difficult to treat and has poor prognosis. Modern medicine believes that its production is related to the mass located in mediastinal lymph node metastasis or fibrosis after radiotherapy to lymphatic vessels, vascular reflux obstruction pressure increase in capillary permeability and tumour cell secretion or release of protein factors [18]. According to Chinese medicine, malignant pleural effusion in advanced stage of lung cancer belongs to the category of “hanging drink” and “branch drink”, which is mostly caused by stagnation of evil poison, deficiency of lung, spleen and kidney qi, dysfunction of qi and transformation, obstacle of fluid transmission, stagnation of drinking evil in the chest and hypochondrium. *Draba nemerosa Hebecarpa* and jujube in the formula of *Draba nemerosa Hebecarpa* and *Draba nemerosa Hebecarpa* have the effect of lung diarrhoea, asthma, water and oedema. Gui Jiahui *et al.* showed [19] that the ethyl acetate extract of *Draba nemerosa Hebecarpa* can effectively inhibit the proliferation of human non-small cell lung cancer H1975 cells and induce apoptosis, which may be related to the down-regulation of the expression levels of Akt and lymphocytoma-2 (Bcl-2) and the up-regulation of the Bcl-2-related protein X (Bax)/Bcl-2 in cancer cells. Zhang Xiaoling found in clinical observation [20] that 29 out of 45 patients had chest pain, and 14 of them had chest pain significantly reduced or disappeared after treatment, with an effective rate of 48.2%; 35 of them had dyspnoea, and 30 of them had dyspnoea disappeared after treatment, with an effective rate of 85.7%; 40 of them had coughs of different degrees,

and 18 of them had symptoms improved after treatment. The effective rate was 45 per cent. *Draba nemerosa* *Hebecarpa* jujube Lung Diarrhoea Soup can gradually reduce the patients' pleural fluid, thus relieving the mechanical compression and reopening the lungs. The clinical symptoms of patients with malignant pleural effusion in the advanced stage of lung cancer were significantly improved, and the quality of life was also improved.

2.5. Chronic Heart Failure

Chronic heart failure is a group of syndromes in which the structural or functional abnormalities of the heart caused by a variety of diseases result in impaired ventricular filling and/ejection function, in which the volume of cardiac excretion fails to meet the metabolic needs of the tissues of the organism, and in which the pulmonary and/corporeal circulation is stagnant and the tissues and organs are underperfused with blood as the clinical manifestations, and which is an end-stage manifestation of cardiovascular disease and the most important cause of death, and one of the two main challenges in the cardiovascular field, and also the A worldwide public health problem [21]. According to Chinese medicine, the occurrence of heart failure is mostly caused by the invasion of external evils, congenital insufficiency, emotional and emotional injuries, dietary predilections, old age and physical decline, etc., which affects the heart over time, weakening of the heart qi, blood and qi not working, stagnation of water and water interconnections, damaging heart yin and yang, and the decline of qi and blood, which develops into the disease of heart failure. *Draba nemerosa* *Hebecarpa* jujube diarrhoea lung soup in *Draba nemerosa* *Hebecarpa* *Hebecarpa* bitter diarrhoea Xin San, through the regulation of the waterway, attracting water downward, special diarrhoea lung real and down gas fixed wheezing, especially diarrhoea lung water and phlegm, diarrhoea water to make it go down to the bladder, so that the water from the bladder out of the accumulation of lung congestion, cough and wheezing, chest and abdominal oedema and other treatment. Jujube sweet and warm, to the spleen, stomach, heart meridian, beneficial to the blood, and the bitter cold nature of *Draba nemerosa* *Hebecarpa* seeds with the use of both slow *Draba nemerosa* *Hebecarpa* *Hebecarpa* seeds grim nature, but also solid protection of the stomach qi, so that the water to drink of the real to go without harming the positive. Modern pharmacological effects show [9] that *Draba nemerosa* *Hebecarpa* has a strong cardiac, diuretic effect. Zhang Guoshun *et al.* [22] used adriamycin to replicate the heart failure model in SD rats and found that the root of *Draba nemerosa* *Hebecarpa* is the main effective part of its anti-heart failure effect, and its anti-heart failure effect is closely related to the improvement of substance metabolism disorders, imbalance of oxidative stress, and inhibition of over-activation of the neuroendocrine system. Zhang Xiaodan *et al.* [23] reported that *Draba nemerosa* *Hebecarpa* exerts diuretic effects by inhibiting the reabsorption of Na⁺, Cl⁻ and water in the renal tubules of SD rats. Clinical observation by Chen Xi [24] *et al.* found that in heart failure pa-

tients treated with *Draba nemerosa Hebecarpa* Dazao Lung Diarrhoea Soup, the level of brain natriuretic peptide (Brain Natriuretic Peptide, BNP) in the serum of the patients was significantly reduced, which can improve the long-term prognosis of heart failure patients, improve clinical efficacy and the quality of life of heart failure patients.

2.6. Pulmonary Heart Disease

Pulmonary heart disease is a kind of clinical syndrome caused by chronic obstructive pulmonary disease and other diseases with structural and functional abnormalities of lung tissues and secondary cardiac dysfunction, also known as pulmonary heart disease, whose clinical manifestations are cough, shortness of breath, wheezing and other respiratory disorders, and acute exacerbation manifested as respiratory failure, right heart failure and so on. According to the theory of Chinese medicine, pulmonary heart disease belongs to the syndrome of “lung distension”, “phlegm”, “oedema” and other categories of Chinese medicine, and this deficiency is mainly due to the lung, spleen and kidney qi deficiency, and this deficiency is mainly due to the phlegm, flooding and blood stasis. Therefore, *Draba nemerosa Hebecarpa* Dazao Lung Tang is the first choice for the treatment of lung diarrhoea and asthma. Among them, *Draba nemerosa Hebecarpa* is the monarch drug, jujube nourishes blood and strengthens the spleen as the adjuvant drug, modern pharmacology shows [25] that *Draba nemerosa Hebecarpa* has a very obvious effect of lowering pulmonary arterial hypertension, cardioplegia, diuretic effect, it can strengthen the contractility of the myocardium, slow down the heart rate, and enhance the cardiac output of the heart in failure, and it has the effect of cardiac glycoside-like effect. Shi Qing and other clinical observation found that [26], after *Draba nemerosa Hebecarpa* jujube diarrhoea lung soup treatment of patients with pulmonary heart disease, its plasma tumour necrosis factor- α (tumor necrosis factor- α , TNF- α), interleukin-6 (interleukin-6, IL-6), the level is significantly lower than that of the control group, patients with pulmonary heart disease, the clinical symptoms of patients with pulmonary heart disease have been significantly improved, indicating that *Draba nemerosa Hebecarpa* jujube diarrhoea lung soup can reduce pulmonary arterial hypertension, diuretic effect. *Draba nemerosa Hebecarpa* jujube diarrhoea lung soup can significantly improve the quality of life of patients with pulmonary heart disease.

3. Basic Research

3.1. Heart Failure

Xu Jianhu *et al.* found [27] that BNP levels were significantly lower and Ang II levels were significantly higher in the Wistar rat model of heart failure gavaged with Dazaojiao Lung Laxative Soup of *Draba nemerosa Hebecarpa* compared with the control group. It has been proved that BNP is the strongest marker of left ventricular systolic insufficiency [28]. Serum BNP levels are significantly

higher in CHF, and the extent of its elevation is positively correlated with the severity of chronic heart failure, which is the most sensitive biochemical indicator for assessing the severity of chronic heart failure and the efficacy of drugs. The elevation of serum BNP levels in CHF is positively correlated with the severity of chronic heart failure, and is the most sensitive biochemical indicator for judging the severity of chronic heart failure, prognosis, and the efficacy of drugs [29]. Ang II is a powerful vasoconstrictor, maintaining blood pressure and blood supply to vital organs, increasing the volume of return blood and increasing cardiac output [30]. It is widely recognized that Ang II level is elevated in heart failure, but persistent and excessive elevation of Ang II will promote the development of heart failure in an undesirable direction, so its level can reflect the seriousness of the state of heart failure after the loss of compensation [31]. It suggests that *Draba nemerosa Hebecarpa*, Dazaozhao and Lung Laxative Soup can reduce BNP and increase Ang II level in the serum of Wistar rat model of heart failure, thus improving the symptoms of heart failure rats.

3.2. Pleural Effusion

An experimental study found [32] that the pleural effusion of guinea pigs that had been perfused with Dabanemerosa *Hebecarpa* big jujube diarrhoea lung soup was significantly reduced, and the aquaporin (AQP1) in the dirty pleural mesothelial cells of this group had been in a state of high expression. Some studies have shown [33] that *Draba nemerosa Hebecarpa* in *Draba nemerosa Hebecarpa* Jujube Lung Laxative Soup can up-regulate the expression of AQP1 in the lung tissues of SD rats, so as to achieve the effect of water-inducing and oedema-reducing. It suggests that *Draba nemerosa Hebecarpa* Dazao Lung Laxative Soup enhances the absorption of pleural effusion by regulating the expression of AQP1 in the interpleural membrane of guinea pigs, thus alleviating the purpose of pleural effusion in guinea pigs.

3.3. Acute Pulmonary Oedema

Zhang Yuan *et al.* experimental study showed [34] that the decoction of Dajao Lung Tang of *Draba nemerosa Hebecarpa* was allowed to rapidly enter the bloodstream through the method of enema in rats with acute pulmonary oedema model, inhibit or reduce the generation and exudation of inflammatory mediators, reduce inflammatory response and tissue damage, and increase the total antioxidant capacity (T-AOC) of the organism, which could positively and effectively reduce and alleviate pulmonary oedema in model rats. It has been shown that [35], IL-4 and Reactive Oxygen Species (ROS) levels were significantly reduced in lung tissues of SD rats with pulmonary oedema model after administration of *Draba Hebecarpa*. The levels of IL-4 and Reactive Oxygen Species (ROS) in the lung tissue of SD rats were significantly reduced, thus improving pulmonary vascular congestion and interstitial oedema, suggesting that the efficacy of *Draba nemerosa Hebecarpa* jujube Lung Laxative Soup in the treatment of acute pulmo-

nary oedema is closely related to the efficacy of *Draba nemerosa Hebecarpa Hebecarpa* in cathartic lung drainage.

In conclusion, *Draba nemerosa Hebecarpa* jujube diarrhoea lung soup, with *Draba nemerosa Hebecarpa Hebecarpa* as the monarch, is widely used in the treatment of respiratory and circulatory diseases according to its different patterns, but there are fewer reports on animal experiments related to *Draba nemerosa Hebecarpa* jujube diarrhoea lung soup, so it needs to be strengthened in order to make the mechanism of *Draba nemerosa Hebecarpa Hebecarpa* jujube diarrhoea lung soup in the treatment of respiratory and circulatory system diseases more convincing.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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