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Clinical Application and Research Progress of Suhuang Cough Capsules

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Abstract: Su Huang cough capsules are based on the Chinese medicine master Professor Chao Chao Xiang more than 40 years of clinical cough treatment experience developed, its drug composition is: ephedra, perilla leaf, earth dragon, honey loquat leaf, fried perilla seed, cicada metamorphosis, front beard, fried burdock seed, schisandra, the whole party to make up the effect of "loosening the wind and promoting the lungs, antispasmodic cough"[1]. Suhuang cough capsules have significant efficacy in the treatment of respiratory diseases, and are widely used in upper airway cough syndrome, cough variant asthma, chronic obstructive pulmonary disease, chronic bronchitis and other diseases, this paper summarizes the application, adverse reactions and mechanisms of Suhuang cough capsules (referred to as Suhuang capsules in the text) in the clinic, providing reference for clinical application.

1. Clinical Application

1.1 Cough

1.1.1 Cough after a Cold

After the acute symptoms of a cold have disappeared, such as sneezing, nasal congestion, and drainage, there are still coughs that are clinically called coughs after a cold. Wan Anxia[2] randomly divided 63 patients with cough after developing into Suhuang capsule experimental group and compound licorice tablet control group, and clinical observations showed that 93. 8% of Suhuang capsules were more effective than 74. 2% of the control group. Su Huang capsules can significantly alleviate the clinical symptoms of cough. Zhang Jing[3] et al. compared self-healing syrup and Suhuang capsules through patient self-evaluation, clinical cough efficacy, TCM symptom efficacy and safety indicators, and concluded that the efficacy scores of Suhuang capsules in all aspects were higher than those of the control group, showing the efficacy of Suhuang cough. Du Biao[4] In the systematic review of SuHuang capsules for the treatment of cough after colds, 1 011 patients included in 9 literature were analyzed from the aspects of cough disappearance time, cough integrals, and efficacy of traditional Chinese medicine symptoms by comparing Suhuang capsules

with drugs such as cough ningdi capsules, bi heping, and yi lung cough capsules The results showed that Su Huang capsules had good efficacy and few side effects.

1.1.2 Cough after Infection

The pathophysiology of post-infection cough is not well understood, mainly due to the irritation of airway inflammation caused by infection[5]. Chen Ai'e[6] clinically observed 85 post-infected cough groups, and found that when combined with suhuang capsules, the compound methoxamine capsules were treated with Suhuang capsules, which significantly improved the cough symptoms of patients, alleviated airway inflammation (P substance (SP) in sputum, decreased interleukin 8 (IL-8) levels, and secretory immunoglobulin A elevated), reduce airway sensitivity, cough effect is significant. Xue Hedong[7] clinically observed the cough group after 1 20 cases of upper respiratory tract infection, the control group alone used montelukast chewable tablets, the observation group combined with Suhuang capsules, the results showed that the combination of drugs can improve the cough and sputum symptoms of patients, the cure rate is high and the safety is worth promoting. Miao Ming[8] randomly divided 60 patients with cough after infection into 2 groups for clinical observation, and the treatment group added Su Huang capsules under the conventional treatment of Meimin pseudo-anesthesia solution, and the results showed that the patients in the treatment group improved significantly, the medication time was shortened, the recurrence rate was low, and the effective rate of the treatment group was 93. 33% significantly higher than that of the control group 73. 33%. Lu Ping[9] randomly divided 120 patients with repeated cough after upper respiratory tract infection into 2 groups, and under the basic antibacterial treatment, the control group was combined with dextromethorphan oral liquid, and the experimental group was combined with SuHuang capsules, and the results showed that the decrease in blood eosinophils, neutrophils and lymphocyte counts in the Suhuang capsule group was significantly greater than that of the control group. Cough symptom score and cough time are significantly reduced and shortened. Li Jiqiang[10] conducted a meta-analysis of 1581 patients in 17 R CT studies of Suhuang capsules and proprietary Chinese medicines or Western medicines, and the results showed that the efficacy of Suhuang capsules was better than that of other proprietary Chinese medicines and Western medicine control groups. The results were statistically significant in the treatment of cough after infection.

1.1.3 Upper Airway Cough Syndrome

Upper airway cough syndrome is a disorder in which nasal discharge is reversed to the back of the nose and throat, resulting in cough as the main clinical manifestation, also known as retronasal drip syndrome[11]. Jiang Piping[12] clinically observed 86 patients with upper airway cough syndrome, the control group used Suhuang capsules alone, and the treatment group added montelukast, and the results showed that the symptoms of throat itching and cough in the two groups improved significantly, and the combined medication time of the treatment group was faster and more efficient. Wang Lingling[13] grouped 10 patients with allergic rhinitis combined with upper airway cough syndrome for clinical observation, and both groups used conventional medication (nasal irrigation + nasal hormone + montelukast), and the observation group was supplemented with Suhuang capsules, The results showed that the observation group not only had effective cough control, but also was better than the control group in terms of nasal symptom relief, indicating that Su Huang capsules also had a certain effect on allergic rhinitis.

1.1.4 Chronic Cough

A cough that lasts longer than 8 weeks clinically is called chronic cough, has a variety of causes,

is usually unrelated to infection, is clinically misdiagnosed, and leads to antibiotic misuse[14]. Fan Xiaoyan[15] randomly divided 136 patients with chronic dry cough into 2 groups for clinical observation, and the experimental oral Suhuang capsule control group took oral licorice tablets, and the results showed that the treatment time of cough, dry throat and chest tightness in the experimental group was less than that of the control group, and the improvement rate of lung function FVC, PEF and FEV1 was higher than that of the control group. Zhang Yi[16] clinical observation was carried out in groups of 78 patients with chronic cough in the clinic, the control group was treated routinely, and the experimental group added Suhuang capsules on the basis of routine, and the results showed that the total effective rate of the experimental group was 97. 4% higher than that of the control group by 76. 9%. Relieves the symptoms of cough and sore throat and improves the quality of life.

1.2 Acute Onset of Chronic Bronchitis

Chronic bronchitis is a chronic, nonspecific inflammation of the bronchial mucosa that is often caused by viruses and bacteria during acute episodes, and the main symptoms are cough, sputum production, and wheezing[17]. Zhu Yarui[18] was clinically observed in groups of 140 patients with chronic branch acute attack, and the two groups of patients were given antispasmodic asthma, anti-infection and beclomethasone propionate aerosol treatment, and the observation group added Suhuang capsules on this basis, and the results showed that the symptom relaxation time of the observation group patients was shortened The severity (BSS) of bronchitis decreased significantly, the serum IL-8, TNF-α, hs-CRP index decreased significantly, the lung function FEV1 and FEV1/FVC increased, and the combined SuHuang capsule had a better effect. Similar research methods, Chen Xi[19] also reached the same conclusion in the clinical observation of 92 patients with chronic branch acute attack, and the efficacy of Su Huang capsules was affirmed.

1.3 Asthma

1.3.1 Cough Variant Asthma

Cough variant asthma (CVA) is a special type of asthma with chronic, recurrent, irritating dry cough as the sole or main clinical manifestation, with a clear seasonal correlation and a high incidence of spring and autumn seasons[20]. Qiu Rong[21] randomly divided 98 patients with a clear diagnosis of CVA into budesonide formoterol combined with Suhuang capsule group, budesonide formoterol group, and Suhuang capsule group for clinical observation for 1 month. The results showed that the symptoms of the three groups were alleviated, but the cough score, inflammatory factors IL-4, IL-5, and TNF-α in the combination group were significantly greater than those in the single drug group, and the negative rate of lung function improvement and bronchial provocation test was also better than that in the single drug group, and the effect of the combination drug was significant. Jiang Jun[22] scored 106 cases from TCM syndrome (cough, itchy throat, shortness of breath, nasal congestion), serum IgE, eosinophils, etc Clinical observation was carried out in VA patients, and the results showed that SuHuang capsules had a significant effect, which could significantly improve the symptoms of patients, reduce eosinophils, and inhibit airway inflammatory response. SuHuang capsules are satisfied in improving patient symptoms and controlling recurrence, and can play a role in synergizing and mitigating toxicity and side effects as a supplement and alternative treatment for CVA[23].

1.3.2 Acute Exacerbations of Bronchial Asthma

Bronchial asthma is a variety of cellularly involved qi to chronic inflammatory diseases, airway

irritation sudden onset of shortness of breath, cough, chest tightness and other symptoms, called bronchial asthma acute attack[24]. Xu Li[25] selected 50 patients with acute attack of bronchial asthma (mild and moderate) for clinical observation, and all patients were given routine treatment with drugs such as oxygen inhalation, glucocorticoids, β2 receptor agonists, and suhuang capsules were added to the observation group. The results of the study showed that the average time of cough relief in the observation group was shortened by 1. 7 days compared with the control group, the length of hospital stay was shortened by 1. 5 days, and the inflammatory markers eosinophil count, C-reactive protein, interleukin and other indicators decreased, and no adverse reactions occurred. Suhuang capsules are worthy of application in mild to moderate asthma exacerbations.

1.4 Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) is a preventable and treatable disease characterized by sustained airflow limitation and is the world's predominant disease One of the economic burdens, the 4th cause of death of global diseases, the current prevalence rate in China is about 2 9%[26].

1.4.1 Stable phase of Chronic Obstructive Pulmonary Disease

Cheng Dezhong[27] grouped 146 patients with COPD stabilization for 3 months of clinical observation, all patients were given health education to quit smoking, oxygen therapy and rehabilitation treatment were given, and on this basis, both groups were given montelukast, the observation group was added Su huang capsules, and the st. George's respiratory questionnaire (SGRQ) score decreased, inflammatory factor indicators CRP, IL-17, IL-8 and TNF-α decreased, lung function improved, good safety. Similar research method, Li Bingbing[28] clinically observed 92 COPD groupings, the control group was given compound methoxamine capsules, and the observation group was added suhuang capsules, and the results of the study also showed that the combination of drugs would be significantly lower Patients have an inflammatory response, improve lung function, and the efficacy of SuHuang capsules is worth promoting. In the clinical[29] observation of93 patients with COPD for 2 months, it was found that tiotropium bromide inhalant combined with Su Huang capsules can improve lung function and reduce procalcitonin in patients High sensitivity C-reactive protein level, thereby controlling the inflammatory response and reducing the acute onset of COPD.

1.4.2 Acute Exacerbation of Chronic Obstructive Pulmonary Disease

Zhao Niankun[30] conducted a one-year clinical study on 107 elderly patients with acute exacerbation of COPD, and the control group was given routine treatments such as oxygen inhalation, anti-infection, expectorant, cough and asthma, and Su Huang capsules were added to the observation group, and the follow-up results after 1 year showed that the number of acute attacks and the number of days of admission in the observation group decreased significantly . Pulmonary function FEV1 and FEV1/FVC were significantly higher than those in the control group, and the walking distance increased by 6min compared with the control group by180 m. And no significant adverse reactions were reported to have a positive effect. Zou Yanli[31] divided 120 patients with COPD into observation group and control group by random number method, and both groups were given (oxygen + cefuroxime sodium anti-infection + dihydroxyprophylline asthma + ambroxol Cough and sputum), the observation group added Su Huang capsules, and the results of the 7-day treatment showed that the cough and sputum symptoms of the observation group were relieved, the lung wheezing sound was reduced, the laboratory indicators (white blood cell count, neutrophil percentage, PaO2, PaCO2), lung function and other results were better than the control group, and

the incidence of adverse reactions in the two groups was not statistically significant. Ren Junqing[32] clinical observation of 88 patients with acute exacerbation of COPD found that the serum inflammatory factor (PCT, CRP) in patients after treatment with Suhuang capsules was found Levels are significantly reduced, lung function is improved, and the effect is confirmed.

1.5 Other Diseases

Chai Shoufan[33] grouped 60 patients with acute laryngitis for clinical observation, the control group was given anti-inflammatory, antiviral and other symptomatic treatment, and the treatment group added Suhuang capsules, and the results showed that the symptoms of sore throat, itching and cough in the treatment group were significantly improved, and the efficiency was significantly higher than that of the control group, which proved the efficacy of Suhuang capsules on acute laryngitis. Liu Ying[34] found in the clinical observation of SuHuang capsules in the treatment of allergic rhinitis that Suhuang capsules had a significant effect on improving symptoms such as sneezing, runny nose and nasal congestion in patients. Adalaiti[35] Through the clinical observation of 128 patients with cough after chemotherapy of advanced advanced non-small cell lung cancer, the results showed that the cough symptoms of the Patients in the Suhuang Capsule Group improved significantly, no adverse reactions occurred, and the efficiency was significantly higher than that of the codeine phosphate control group.

2. Pharmacological Mechanism Studies

2.1 Composition Determination

Liu Qinyan[35] used LC-MS technology to determine the non-volatile components in SuHuang capsules and detected 50 kinds of compound components, including 4 alkaloids (ephedrine, pseudoephedrine etc.), 8 phenolic acids (neochloroic acid, chlorogenic acid, etc.), 5 flavonoids (flavonoid C-glycosides, flavonoidSO - Glycosides, etc.), 2 coumarins (pre-white coumarin, pre-caraway), 29 lignans (dibenzyl butyrolactone type lignans). , biphenylcyclooctadiene lignans) and 2 other compounds (citric acid, adenosine). Li Shufeng[36] used distillation method combined with GC-MS retention index method to analyze and determine the volatile components in volatile oils in Suhuang capsules, and 54 kinds of components were measured, including pinenes, β -Expectorant and antitussive substances such as pinenes, cough and asthma substances such as β-caryophyllene, α-terpineol, myristic ether, nerolice, tertol and other anti-inflammatory antibacterial substances, which help to clarify the basis of drug cough substances. Su Huang capsule quality testing is based on the ephedrine hydrochloride content as the standard, in order to more effectively control the quality of the preparation, Wang Jialiang on the medicine of burdock glycosides, burdock glycosides Seven ingredients were determined to provide strong data support for better drug quality control[37].

2.2 Anti-inflammatory Effect

Liu Lei[38] found that the suhuang capsule can be modified to change the airway hyperreactivity of mice by comparing the expiratory interval value (Penh) of the model group and the treatment group. The tumor cell infiltration of mice in the lung histopathological section treatment group decreased, the number of eosinophils in dust mite-induced model mice increased significantly, while the eosinophil count of mice in the treatment group decreased significantly, and suhuang capsule treatment could reduce the airway of mice MRNA expression of MUC5AC, reduction of HDM-sIgE secretion, reduction of IL-4, IL-5 and IL-13, preliminary demonstration of Su Huang

capsules to reduce inflammatory infiltration, airway hyperreaction and inhibition of airway mucus hypersecretion It has a therapeutic effect. Gao Ming[39] et al. observed the asthmatic guinea pig model and found that the eosinophil percentage in the alveolar lavage fluid of the Guinea pigs treated in the Suhuang capsule group decreased significantly compared with the model group, and the airway inflammatory response decreased significantly. Zhang Zhongde[40] found through animal models that the percentage of eosinophils in the alveolar lavage fluid of guinea pigs in the Suhuang capsule treatment group decreased, the pathological changes of lung tissue reduced inflammatory secretion and lymphatic infiltration decreased, and TNF-α It is a cytokine with extensive activity, increasing cellular inflammatory infiltrates, suhuang capsules regulate TH1/TH2 by reducing inflammatory factors such as TNF-α, IL-4 and Ig E in serum The ratio reduces inflammatory mediator production and reduces airway inflammation. Wu Hong et al. [41] clinically observed 76 patients with COPD, and both groups of patients inhaled budesonide formoterol powder, and the experimental group added Suhuang capsules, and the serum inflammatory factors of patients were determined by enzyme-linked immunosorbent assay IL-6, IL-8, the results show that Su Huang capsules can reduce the inflammatory response. Wang Ning[42] et al. randomly grouped 90 patients with cough variant asthma for clinical observation, 2 groups of patients inhaled sulidene regularly, and the observation group added Suhuang capsules, and after 2 weeks of treatment, the serum of patients was detected TNF-α, TGF-β1、Ig E. TNF-α is an inflammatory secretory factor that mediates the body's inflammatory response, TGF-β1 is an inflammatory factor that induces chronic inflammation of the airways, epithelial cell proliferation, and fibrosis, and Ig E is involved in asthma allergic reactions, and the results show the observation group Serum TNF-α, TGF-β1, Ig E factors were significantly reduced, and SuHuang capsules could slow down the airway hyperreactivity state and control inflammation.

2.3 Regulates Immune Action

Studies have found that the acute onset of chronic obstructive pulmonary disease and bronchial asthma is closely related to cellular immune function, and Suhuang capsule can reduce immune damage and airway inflammation by regulating the body's immune function, and reduce the occurrence of disease. Wu Suxia[43] treated the effect of immune function on immune function in patients with acute exacerbation of COPD through Su Huang capsules, and the results showed that the fraction of Th17 cells and the ratio of Treg/Th17 were significantly lower than those of the control group, Th17, Treg cells and anti-inflammatory factors Combined with the maintenance of body immunity, and closely related to the progression of acute exacerbations of COPD, it is shown that SuHuang capsules can regulate Th17 and Treg cell imbalance, thereby improving immune function. T lymphocyte subset CD4+ and CD8+ levels are important indicators of immune function, Wang Zhihua[44] in the immunomodulatory effect of Suhuang cough capsules on asthma patients found that after 3 months of treatment, the rise of CD4+ and CD8+ in the Suhuang capsule group were greater than those in the control group. It is shown that Su Huang capsule can improve the immune function of patients by improving the disorder of blood T lymphocyte subsets. Zhang Han[45] Found in the clinical study that the serum T lymphocyte CD3+, CD4+, and cd8+ of the treatment group were significantly increased, and the CD8+ decreased significantly, indicating that SuHuang capsules could inhibit T Cells cause immune damage to the body and reduce the acute onset of bronchial asthma, improve immune function, enhance antibacterial and anti-inflammatory ability, improve prognosis. Lian Xiaoyan[46] reported the effect of Suhuang capsules on serum immunoglobulin IgA, IgG, blood CD8+, CD4+/CD8+, and proved that Suhuang capsules can be corrected by adjusting immunoglobulins T lymphocyte balance, thereby improving immunity.

2.4 Lung Function Effects

Most of the literature reports that Suhuang capsule can improve patient lung function by changing FEV1, FEV1/FVC, PEF and other indicators. Lung function is improved primarily by reducing airway inflammation, reducing airway hyperreactivity, reducing mucus hypersecretion, and slowing airway remodeling. [39,40,43]

2.5 Antiviral Effect

Li Junying[48] et al. studied the in vitro experiment of the effect of Suhuang capsule on respiratory syncytial virus, and first cultured human lung cancer cells in a sterile environment, which was determined by tetramethylazozolium salt staining Su Huang capsule drug toxic concentration, calculate half of the toxic concentration of the drug, the calculated half of the toxic concentration is added to the respiratory syncytial virus (RSV) medium, after the end of the culture with a microscope observation Inhibitory effect on the virus. Ribavirin was the control group, and the results showed that Su Huang capsules at 1. 36 mg/m L and ribavirin at 0. 625 mg/m L could completely inhibit respiratory syncytial virus. It proves that Suhuang capsule has good antiviral effect and low cytotoxicity, which provides a certain experimental basis for clinical practice, and more research is needed to confirm it.

3. Adverse Reactions Were Reported

Liu Ji[47] reported that a patient taking a combination of loratadine citrate tablets, montelukast sodium tablets, and Suhuang capsules caused a rash on the chest and back of the patient, and the symptoms disappeared after 3 days of symptomatic treatment after giving calamine lotion. Huang Xiaofang[48] reported that a patient had symptoms of limb tremor after taking Su Huang capsules, accompanied by palpitations, sweating and other symptoms, which lasted for about 10 minutes, and there were no obvious abnormalities in the patient's EEG and head CT After discontinuation of the drug, the patient's symptoms did not appear. Hong Fanqing[49] reported that a patient had an irregular rash on his hands, back and legs after taking SuHuang capsules, and considered the rash caused by drug allergies, and was given dexamethasone injection combined with calamine lotion treatment. Symptoms disappear after 3 days. Han Hui reported that 1 patient had urinary retention after taking Su Huang capsules, and the patient had urinary urgency, urinary retention and abdominal distention and pain, and immediately stopped the drug and was given catheterization After 24 hours, the patient's urinary function returned to normal. Zhang Jing[3] reported that one patient had diarrhea after taking the drug. Xue Hedong[7] reported adverse reactions of 2 cases of nausea, 1 case of mild headache, and 2 cases of constipation after taking the drug. Judging from the reported adverse reactions, most patients have mild symptoms, can recover on their own after simple treatment, no serious adverse reactions have been reported, and the overall safety of Suhuang capsules is better.

4. Conclusion

Su Huang Capsule was founded by the Chinese medicine master Chao Enxiang based on the theory of "wind cough", and is widely recognized for its efficacy in treating cough symptoms. (1) Clinical literature reports are mainly used to treat cough caused by cough after cold, cough after infection, upper airway cough syndrome, chronic cough, cough variant asthma, chronic bronchitis, COPD stabilization period, COPD acute exacerbation period and other diseases; Acute laryngitis and allergic rhinitis have also been reported in the literature relatively little, requiring further

observation and verification by clinicians. (2) In most clinical observations, Suhuang capsules are used in combination with clinical first-line Western medicines for related diseases to achieve the optimal treatment effect and are an effective supplement to the treatment of related diseases. (3) There may be misunderstandings in clinical use, Chinese medicine has a relatively detailed understanding of cough, including cough with sputum, no sputum, choking cough, acute cough, cough, etc. , Su Huang capsules are mainly used for the treatment of dry cough without sputum or less sputum patients; Patients with more sputum use Su Huang capsule airway soothing, cough reduction is not conducive to sputum and airway harmful substances discharge, is not conducive to prognosis, clinical use when differentiated. (4) The compound components of traditional Chinese medicine are complex, and the number of compounds is not easy to control, which may cause adverse reactions in some patients, and if it occurs, the drug should be stopped in time. In addition, although there are many experimental studies of Suhuang capsules, the mechanism of action is not very clear, how to make better use of modern science and technology, further study the composition and pharmacological effects of Suhuang capsules, clarify its mechanism of action has been recognized by colleagues around the world, and better promote Traditional Chinese medicine to the world.

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