Review

Post-infectious cough of different syndromes treated by traditional Chinese medicines: A review

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ABSTRACT

The application of traditional Chinese medicines (TCMs) has a history of more than 2000 years, which have the characteristics of multi-component, multi-target, and high safety. Post-infectious cough (PIC) is a respiratory disease with high incidence. It belongs to subacute cough and accounts for as much as 40%–50%. Cough is the main clinical manifestation of PIC. PIC seriously affects people's life quality because of complex etiology, long-term course of disease, treatment difficulties and other characteristics. Western medicines are based on the principle of symptomatic treatment, so they are often difficult to control PIC fundamentally. These factors could due to that PIC is prolonged and unable to heal repeatedly. TCMs have obvious advantages in treating PIC, with accurate curative effects, less side effects and adverse reactions and are effective in improving PIC-related symptoms and indicators, enhancing patients’ life quality and reducing pain. TCMs, guided by holistic concept and syndrome differentiation, advocate determine treatment on the basis of pattern types, and have remarkable clinical treatment effects. As for TCMs etiology, pathogenesis and syndrome types of PIC, TCM scholars have not yet reached a unified standard. However, most of them think that wind pathogen can cause PIC alone, or it can be combined with other evils, which might be the main mechanism of PIC. This paper discusses the advantages and limitations of TCMs in PIC treatment from etiology, pathogenesis, distribution of syndrome types and treatment of TCMs. This article focuses on the treatment methods and pharmacodynamic material basis of wind pathogen, providing ideas in treating PIC of TCMs clinically and innovative drug development.

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1. Introduction

Post-infectious cough (PIC) refers to a cough lasting for 3–8 weeks after experiencing the acute symptoms of an upper respiratory tract infection (Mehrabi, 2016; Kwon, Oh, Min, Lee, Choi & 2006; Lai & Nie, 2014). The main characteristics of PIC are that cough still persists, which the main manifestation is irritant dry cough or cough with a small amount of white mucus sputum, after the symptoms of the acute phase of respiratory tract infection disappear. In addition, the patients’ chests radiographs findings are negative (Braman, 2006; Hu, Zhao, & Cui, 2016). According to studies of unselected adult patients with a history of upper respiratory tract infection, the proportion of PIC symptoms increased from 11% to 25%, while the incidence of upper respiratory tract infection, the proportion of PIC symptoms disappear. In addition, the patients’ chests radiographs findings are negative (Braman, 2006; Lai & Nie, 2014). The main characteristics of PIC are that cough still persists, which the main manifestation is irritant dry cough or cough with a small amount of white mucus sputum, after the symptoms of the acute phase of respiratory tract infection disappear. In addition, the patients’ chests radiographs findings are negative (Braman, 2006; Lai & Nie, 2014).

The pathogenesis of PIC is still unknown in Western medicines, and many scholars generally believe that the incidences of PIC are closely related to airway epithelial mucosal injury, airway inflammation, airway hypersensitivity, cough reflex sensitivity, gastroesophageal reflux (Braman, 2006). Up to now, there is no specific treatment for PIC in clinical practice, and symptomatic treatment is mainly used, including antitussive agents, antihistamines and decongestants (Hu, Zhao, & Cui, 2016). However, these drugs often produce inevitable side effects, such as drowsiness, dry mouth, loss of appetite, nausea, constipation, easy recurrence after drug withdrawal (Zhang, Tang, Fang, & Yu, 2017), which bring additional pain to patients.

Although the different planting areas and harvest seasons of traditional Chinese medicines (TCMs) may lead to different components and quality, and then affect efficacy, the effectiveness and relative safety of TCMs have been shown by the long-term use of human beings. TCMs often used to treat some refractory diseases, such as hypertension, diabetes and chronic obstructive pulmonary disease (Zhang et al., 2021; Xia et al., 2018; Zhang, Liu, & Kong, 2019). Recently, there have been more reports that TCMs have achieved remarkable results for clinical treatment of PIC. Traditional ancient prescriptions such as Maimendong Decoction, Xiaodinglong Decoction and their modified prescriptions exhibited potential in treating PIC clinically. Modern Chinese patent medicines represented by Suhuang Zhike Capsule have also been widely used in the clinical treatment of PIC (Hu, Zhao, & Cui, 2016; Zhang, Tang, Fang, & Yu, 2017; Ding, Wang, Yao, Zhou, & Zhu, 2016; Li, Zhang, Han, Xu, & Zhang, 2016; Xue & Zhu, 2016).

According to theoretical system, etiology and pathogenesis of TCM, this paper systematically introduces the research progress of treating PIC with TCMs. Based on the guiding ideology of determine treatment on the basis of pattern types, this article analyzes the commonness and characteristics of PIC research in TCMs treatment. Although there is no uniform standard for TCM etiology, pathogenesis and syndrome types distribution of PIC, most physicians believe that wind pathogen is the main pathogenic factor leading to PIC. To provide theoretical references for treating PIC with TCMs, this review further discusses the treatment rules and pharmacodynamic material basis of PIC caused by wind pathogen order. Meanwhile, it supplies ideas for clinical treatment of PIC with TCMs and innovative drug development.

2. TCM etiology and pathogenesis of PIC

There are little disease names corresponding to PIC in ancient Chinese medicine books. According to the symptoms and medical history of PIC, modern Chinese medicine practitioners often classify PIC as “exogenous cough”, “obstinate cough”, “lasted cough” and “wind cough”. Modern Chinese medicine physicians have different understandings of PIC etiology and pathogenesis, and there is no unified standard of TCM pathogenesis at present. Chao proposed the theory of “wind cough” (Yang & Chao, 2014; Deng, Chen, & Zhang, 2016). Clinically, the cough with “no or less sputum” is the main manifestation, with the characteristics of paroxysmal and irritating cough, which is similar to the symptoms of PIC. He considered that the main pathogenic factor of PIC is wind pathogen, and advocates treating PIC from wind. Shi thought that PIC is often caused by exogenous wind pathogen (Shi, Lin, Ma, Wang, & Ji, 2016). With the development and treatment of the disease, although the exterior syndrome is gradually eliminated, the remaining evil is not extirpated. When stimulated by cold wind and peculiar smell, it can induce cough. In addition, PIC is often accompanied by internal injury pathogenesis, which also causes disease with other evils. Wu found that the incidence of PIC may be related to the early frequent use of antibiotics or excessive use of heat-clearing and detoxification TCMs (Wu et al., 2013).

The main pathogenesis is exogenous pathogens attacking the lung, which causes impairment of dispersing and descending function of the lung (difficult to breathe, not smooth). After that, the illness is mistreatment, and the pathogenic Qi remains inside, which leads to the deficiency of vital Qi (decline in resistance) and the disease is prolonged and unhealed. Chen et al believed that the occurrence and development of PIC are related to the patient constitution, and the constitution type is connected with the sensitivity and tolerance of the body to external pathogenic factors (Kan & Chen, 2018; Kan, Deng, Liu, & Chen, 2018). Qian et al. proposed that PIC is in Shaoyang (It has the meaning of weakening Yang Qi. Its position is half exterior and half interior, that is to say, Shaoyang plays a pivotal role between the two Yang Meridians), and the basic pathogenesis is dysfunction of acting as a pivot (hinder normal physiological function) and lung-Qi being unable to descend (Hong, Cui, Chen, & Feng, 2020; Zhang, 2017; Wang & Zhu, 2014). Zhu believed that PIC includes post-cold cough and persistent infectious cough, with different pathogenesis and treatment rules (Dai & Zhu, 2018). In conclusion, most TCM practitioners believe that wind pathogen is the main pathogenic factor of PIC. Although the TCM etiology and pathogenesis of PIC have not been unified, it is explained in two ways: exogenous and internal injuries. One part thinks it is caused by wind pathogen or wind pathogen combined with other evils, and the other part believes that it is too deficient to resist the disease caused by exogenous pathogens.

3. TCM clinical types of PIC

According to the clinical symptoms of PIC and the clinical experience of TCM, PIC is classified dialectically. Jiang studied the clinical symptoms of 200 patients with PIC and summarized the TCM clinical types (Jiang, Liu, & Mao, 2016). The results showed that PIC mainly had four TCM syndrome types, namely wind-cold evil tightening the lung, wind-heat invading the lung, wind pathogen adhering the lung and wind-dryness injuring the lung, among which wind-cold evil tightening the lung is the most common. Li believes that wind pathogen is the main cause of PIC, and summarizes five syndrome types: Wind-cold evil tightening the lung, wind-heat invading the lung, wind-dryness injuring the lung, wind pathogen adhering the lung, and wind-phlegm blocking the lung (Li, Sun, & Gao, 2018). Wu studied the distribution characteristics of TCM
clinical syndrome types of PIC in 300 patients (Wu, Cai, & Wang, 2013). The study showed that PIC was mainly characterized by wind-cold attacking the lung, followed by wind-heat invading the lung, wind-dryness injuring the lung and deficiency of both vital energy and Yin. Yan discussed the distribution characteristics of TCM clinical syndrome types of 419 PIC patients by factor analysis method, and summed up 36 TCM syndromes, of which wind pathogen adhering the lung is the most common, followed by the syndromes of lung-Qi deficiency, intense lung heat, phlegm turbidity and obstruction of lung, wind-heat invading the lung, lung-spleen Qi deficiency, deficiency of both lung Qi and Yin, and phlegm-heat accumulation in lung (Yan et al., 2014). It can be seen that wind pathogen plays a key role in the syndrome types distribution of PIC.

4. TCM formulas used to treat PIC in clinic

Based on the characteristics of various and different syndrome types of PIC, modern TCM practitioners mostly adopt the ideas of classification and treatment, and achieve good clinical results. On the basis of reading and analyzing a large number of literatures, the research results of TCMs in treating PIC are summarized, as shown in Table 1.

As above-mentioned, wind pathogen is the main content in treating PIC by TCMs. It can cause disease alone or together with dryness, cold, heat and phlegm (Fig. 1). Wind pathogen is the first of six evils including wind, cold, heat, humidity, dryness and heat, which is one of the most common and important pathogenic factors. Most modern TCM physicians pay attention to the pathogenic characteristics of wind pathogen, and most of them use TCM prescriptions with the efficacy of dispelling wind or expelling wind, ventilating lung and relieving cough (Table 1). In the selection of single TCMs, Glycyrrhizae Radix etRhizoma (Gancao), Armeniacae Semen Amarum (Kuxingren), Platycodonis Radix (Jiegeng), Asteris Radix etRhizoma (Ziwan), Cicadae Periostracum (Chuntui), Stemonae Radix (Baibu), Ephedrae Herba (Mahuang) and Schizonepetae Spica (Jingjie) are frequently used (Table 1).

4.1. TCM prescriptions for clinical treatment of PIC caused by wind pathogen

Modern research has proven that TCMs with the effects of expelling wind or expelling wind, ventilating lung and relieving cough is indeed effective in the treatment of PIC caused by most wind pathogens. Du used Qufeng Zhike Decoction (efficacy: expelling wind and clearing heat, ventilating lung and relieving cough) to treat PIC of wind pathogen invading the lung (Du, 2014). Compared with Montelukast Sodium, Qufeng Zhike Decoction has the advantages of faster onset time, shorter course of treatment and more significant treatment effects. Zhong observed the curative effects of TCM syndromes, total scores of cough symptom and visual simulation scores of cough in patients with PIC of wind pathogen invading the lung (Zhong, Yang, & Weng, 2017). They found that taking Xuanwu Zhike Decoction (efficacy: expelling wind, ventilating lung and relieving cough) on the basis of conventional Western medicine treatment can play better therapeutic effects. Yan respectively used Jiushou Tang (efficacy: expelling wind and ventilating lung, resolving phlegm and relieving cough) and Compound Methoxamine Capsule to treat PIC patients with wind pathogen adhering the lung for 14 d (Yan, 2019). The results showed that the efficacy of Jiushou Tang was superior to Compound Methoxamine Capsule in improving symptoms of PIC patients, with fewer adverse reactions. Sun found that Xuanfei Zhi- sou Decoction (efficacy: expelling wind and evil, ventilating lung and relieving cough) can reduce TCM syndrome scores, cough symptom scores, serum interleukin 1-β (IL-1β) level and shorten cough symptom onset time of PIC (wind pathogen lurking the lung), which is safe and effective (Sun, 2019). We selected 120 PIC patients with wind pathogen lurking the lung to study the clinical efficacy of Qingfei Zhisou Tang (efficacy: expelling wind and ventilating lung, relieving cough and resolving phlegm) combined with Compound Methoxyphenamine Capsule in treating this syndrome (Wei, 2018). The results showed that the combination of the two drugs could relieve the cough degree and improve the quality of life more effectively, and the effects were better than that of using Compound Methoxyphenamine Capsule alone. Secretory immunoglobulin A (SIgA) is the main antibody of local anti-infective immunity of body mucosa (Zhu, 2017). Huang used modified Mulberry Apricot Decoction (expelling wind and ventilating lung, clearing throat and relieving cough) combined with Compound Methoxyphenamine to treat PIC patients with wind pathogen and stagnated heat, found that the combined use of drugs could effectively increase SIgA content in patients’ airway mucosa, and the therapeutic effects were better than Compound Methoxyphenamine alone (Huang, 2016).

4.2. Common single TCMs for clinical treatment of PIC caused by wind pathogen

Gancao, entering into the heart, lung, spleen and stomach meridians, has the functions of detoxification, moistening lung, relieving cough, relieving acute symptoms and invigorating spleen (Lv, 2019; Lin, 2019; Wang, 2017). It is sweet in taste, neutral in nature and good in harmony with hundreds of medicines. It can be compatible with most Chinese medicinal materials and harmonize their medicinal properties (Li, 2019b). Modern pharmacological studies have shown that GanCao has the effects of anti-inflammatory, anti-allergic, anti-tussive, reducing airway hyper-responsiveness (Lv, 2019; Huang, 2016; Wang, 2017).

Kuxingren has the effects of expelling wind and evil, resolving phlegm, relieving cough and asthma (Yan, 2019). It has been found that amygdalin, the main active ingredient of KuXingRen, can be decomposed into hydrocyanic acid in the body, which can then inhibit the respiratory center, make breathing more gently, and play a part in relieving cough and asthma (Ao, Zhang, Shao, Wang, & Dou, 2021). Many Chinese medicine practitioners use Kuxingren as a medicine for pulmonary diseases in clinic.

Jiegeng is bitter and pungent in taste, neutral in nature, belonging to lung meridian. It has the functions of ventilating lung, relieving sore throat, resolving phlegm and discharging pus (Kong, 2020; Yu, 2016). Studies have shown that the main chemical components of JieGeng include polysaccharides, triterpene saponins, flavonoids, which have pharmacological activities such as antitussive and expectorant, anti-inflammatory, anti-tumor, hypoglycemic and enhancing body immunity (Zuo, Yin, & Hu, 2019).

Ziwan goes into the lung meridian, which has the effects of moistening lung and lowering Qi, resolving phlegm and relieving cough (Zhou, 2016). It is rich in chemical components, mainly including terpenoids and their glycosides, peptides. Modern pharmacological studies have shown that it has the effects of antitussive and expectorant, ventilating lung and relieving asthma, and its antitussive and expectorant effects mainly come from terpenoids (Shen, Yu, & He, 2017; Yan, 2019; Peng, Xin, Ren, Luo, & Wang, 2015; Fang et al., 2012).

Chuntui is an insect medicine, which is sweet in taste and cold in nature. It acts on the lung and liver channels, and has the functions of expelling wind-heat, ventilating lung and relieving sore throat (Hong et al., 2018; Zeng, 2018). Chuntui has complex chemical composition, mainly containing chitin, protein, amino acid (Zhao, Zhou, Wang, Zhang, & Sun, 2017). Modern pharmacological
Table 1

| No. | TCM prescriptions | Efficacy | TCMs compositions | Syndrome types | Refs. |
|-----|-------------------|----------|------------------|----------------|-------|
| 1   | Qingfeng Ganke Granules | Expelling wind and relieving cough | Ephedrae Herba (Mahuang, MH), Sabia japonica Maxim (Qingfengteng, QFT), Stemonae Radix (Baibu, BB), Asterix Radix et Rhizoma (Ziwan, ZW) | Wind pathogen invading the lung | Jiang et al. (2015) |
| 2   | Majing Zhike Granules | Ventilating lung and expelling wind, relieving cough and resolving phlegm, nourishing Yin and moisturizing lung | MH, Schizonepetae Spica (Jingjie, JJ), Farfarae Flos (Xuanfuhua, KDH), Inulae Flos (Xuanfuhua, XFH), Cicadae Periostracum (Chantui, CT), Cynanchi Paniculati Radix et Rhizoma (Xuchangqiang, XQG), Arctii Fructus (Niubangzi, NBZ), Glehniæ Radix (Beishashen, BSS), Scrophulariae Radix (Xuanfuhua, XS), Trichosanthis Fructus (Gualou, CL), Parotiaæ Radix Rubra (Chishao, CS), Glycyrrhizae Radix et Rhizoma (Gancao, GC) | Wind pathogen invading the lung | Lin (2019) |
| 3   | Six Ingredients Decoction and Three Crude Drugs Decoction | Expelling wind and ventilating lung, resolving phlegm and relieving cough | JJ, Saposnikoviae Radix (Fangfeng, FF), Platycodonis Radix (Jiegeng, JG), Bombyx Batryticatus (Jiangcan, JC), MH, Arminiacæ Semen Amuram (Kuxingge, KXR), GC, CT, Pheretima (Dilong, DL), ZW, KDH, Belamcandae Rhizoma (Shegan, SG) | Wind pathogen invading the lung | Jiang (2018) |
| 4   | Jinfengcao Powder | Ventilating lung and relieving cough | XFH, Pinelliae Rhizoma (Banxia, BX), BS, Peucedani Radix (Qianhu, QH), Ji, Sinapis Albae Semen (Baijiexi, BJX), Perillae Foliolum (Zizyphi, ZSY), KXR, JC, GC | Wind pathogen invading the lung | Li & Qin (2013) |
| 5   | Chaima Qufeng Tang | Dispel lung and relieving exterior syndrome, ventilating lung and relieving cough | MH, Bupleuri Radix (Chaihu, CH), FF, Mume Fructus (Wumei, WM), KDH, Perillae Foliulum (Zizizi, ZSZ), SG, ZW, BS, GC | Wind pathogen invading the lung | Gao (2017) |
| 6   | Xuanwu Zike Decoction | Dispersing wind, venting lung and clearing cough | Mori Foliolum (Sangge, SY), QH, KG, KXR, ZW, BS, GC | Wind pathogen invading the lung | Zhong, Yang, & Weng (2017) |
| 7   | Peony Liquorice Decoction | Relieving urgent state and spasm, soothing liver and relieving pain | BS, GC | Wind pathogen invading the lung | Yang (2016) |
| 8   | Qufeng Zhike Decoction | Expelling wind and clearing heat, ventilating lung and relieving cough | FF, CT, Angelicae Dahuricae Radix (Baizhi, BZ), Isatis Radix (Banlangen, BLG), Cyrtomium Fortunei (Guanzhong, Gzhong), Chebulaceæ Fructus Immaturus (Zangjiqiang, ZQG), Orosyli Semen (Muhudie, MHD), WM, KXR, BB, Glycyrrhizae Radix et Rhizoma Prorapatae Cum Melle (Zhiqiancao, ZQC) | Wind pathogen invading the lung | Du (2014) |
| 9   | Wind-Dispelling and Cough-Checking Formula | Expelling wind and clearing heat, ventilating lung and relieving cough | SC, ZW, KDH, JC, CT, JC, powders of Scorpion (Quxianzi, QX), Citri Reticulatae Pericarpium (Chenpi, CP), Magnoliae Officinalis Cortex (Houpo, HP), Scurripellariae Radix (Huangqin, HQ), Houttuyniae Herba (Yuxingcao, YXC), SY, Taraxaci Herba (Panguying, PGY), KDH | Wind pathogen invading the lung | Wu, Shen, & Yu. (2015) |
| 10  | Xuanfei-Zhisou Decoction-Δ | Dispersing wind and ventilating lung, relieving cough and resolving phlegm | MH, NBZ, KXR, CT, Cynanchi Stauntonii Rhizoma et Radix (Baiqian, BQ), Mori Cortex (Sangbaishi, SBP), KDH, FRC, QX, ZGC, Chelidonii Herba (Baiqucai, BQC), CT, ZSY, BB, BQ, Eriobotryae Fructus (Pipe, PPF), KXR, JC, ZGC | Wind pathogen invading the lung | Zhu, Yang, Wu, Zhang, & Tang (2013) |
| 11  | Baichan Zhike Decoction | Dispersing wind pathogen, ventilating lung and relieving cough | MH, KXR, CT, ZSY, BB, BQ, Eriobotryae Fructus (Pipe, PPF), KXR, JC, ZGC | Wind pathogen invading the lung | Li (2002a) |
| 12  | Shufeng Zhike Recipe | Expelling wind and clearing heat, ventilating lung and resolving cough | JJ, CT, JC, KXR, BB, ZW, QH, HP, SG, JC, XS, GC | Wind pathogen invading the lung | Li (2019b) |
| 13  | Suhuang Zhike Capsule | Dispersing wind and ventilating lung, relieving cough and resolving phlegm | MH, KXR, CT, ZSY, ZSC, Schizandrae Chinensis Fructus (Wuweizi, WWZ), NBZ, QH, PPF, DL, etc. | Wind pathogen invading the lung | Li, Zhang, Han, Xu, & Zhang. (2016); Wan (2017) |
| 14  | Qufeng Xuanfei Recipe-A | Ventilating lung and expelling wind, relieving spasm and cough | BB, ZW, JG, FF, KDH, CT, JC, BQ, QH, QX, DL, ZGC | Wind pathogen invading the lung | Yan, Zhou, Liang, Luo, & Yang (2020) |
| 15  | Qufeng Xuanfei Recipe-B | Expelling wind and ventilating lung, depressing Qi and relieving cough | MH, HQ, BB, ZW, Cotidiasis Radix (Huanglian, HL), QH, HP, Sinomenii Caulis (Qingfengteng, QFT) | Wind pathogen invading the lung | Ji (2013) |
| 16  | Goubo Guoming Decoction | Expelling wind and clearing heat, ventilating lung and resolving cough | Astragalus Radix (Huangqin, Hq), Uncariae Ramulus Cum Urticea (GouTeng, GT), Menthae Haplocalyceæ Herba (Bohe, BH), YX, Polygoni Cuspidati Rhizoma et Radix (Huzhang, HZ), JC, ZW, KDH | Wind pathogen invading the lung | Miao (2019) |
| 17  | Zhisou Powder Combined with ChuanXiong Tea | Expelling wind and ventilating lung, removing pathogens out | ZW, BB, Ji, Chuanxiong Rhizoma (Chuanxiong, CX), KXR, FF, BQ, PPF, ZSY, Notopterygii Rhizoma et Radix (Qianghuo, Qhuo), Bzhi, JC, CP, GC | Wind pathogen invading the lung | Zhang (2019c) |

(continued on next page)
| No. | TCM prescriptions | Efficacy | TCMs compositions | Syndrome types | Refs. |
|-----|-------------------|----------|------------------|----------------|-------|
| 18  | Itching and Cough Relieving Decoction-A<sup>a</sup> | Nourishing Yin and clearing lung, relieving cough and resolving phlegm, expelling wind and relieving itching, relieving sore throat and suppress coughing | MH, GC, CT, QX, KXR, BSS, Fritillariae Thunbergii Bulbus (Zhebeimu, ZBM), CS, DP, XFHP, JJ, XCQ, Succus Bambusae (Zhihu, ZL), BX, XS, Salviae Miltiorrhizae Radix et Rhizoma (Danshen, DS), Fagopyri Dibetry Rhizoma (Jiuqianmiao, JQM), BQ, KXR, Dictamnus Cortex (Baixianpi, BXP), ZW, SG, ZQG, GC, JG, JYX, Japanese Metaplexis Pericarp (Tianjiangke, TJK), FF, WM | Wind pathogen invading the lung | Zheng (2017) |
| 19  | Modified Xuanfei Ningsou Decoction-B<sup>a</sup> | Dispelling wind and heat, ventilating lung and relieving cough | GT, SY, Chrysanthemi Flos (Jihua, Jhua), GC, KXR, QH, BQ, SHF, ZW, GC, JJ, FF | Wind pathogen invading the lung | Tao, Yu, Zhai, Zhao, & Wan (2015) |
| 20  | Fengke Decoction | Dispelling wind and ventilating lung, relieving urgent state and spasm, relieving sore throat and cough | MH, ZS, ZSY, PPF, ZW, KXR, SG, NBZ, CT, DL, WWZ | Wind pathogen invading the lung | Huang, Ling, Chen, & Huang (2014) |
| 21  | Jiawei Shengjiang Powder | Dispelling wind and clearing lung, downbearing counterflow to suppress cough | JC, CT, Curcumae Longae Rhizoma (Jianghuang, Huanghang), DHI, BB, BQ, GC, JG | Wind pathogen invading the lung | Zhao (2015) |
| 22  | Qufeng Runfei Decoction | Expelling wind and moistening lung, downbearing counterflow to suppress cough | JJ, FF, JC, BB, ZZ, PPF, JC, CT, QH, GC, etc. | Wind pathogen invading the lung | Li (2010a) |
| 23  | Zhike Decoction | Dispelling cold and ventilating lung, resolving phlegm and relieving cough | XPH, BS, QH, JJ, Magnetitum (Cishi, Cshi), ZSY, BQ, JC, ZW, BB, CP, GC, KXR, XYC | Wind pathogen invading the lung | Fang (2016) |
| 24  | Chanjia Zhike Decoction | Dispelling wind and resolving phlegm, warming and moistening to stop cough | CT, JC, BX, CP, Poria (Fuling, FB), BB, ZW, KD, DS, Curcumae Radix (Yujin, YJ), JG, GC, Qi, Aurantii Fructus (Zhiqiao, ZQ) | Wind pathogen invading the lung | Fang (2016) |
| 25  | Modified Liuwei Chanjia Decoction | Expelling wind and resolving phlegm, relieving the qi of lung | JC, CT, KXR, ZZ, JJ, FF, BH, GZC etc. | Wind pathogen invading the lung | Ding & Luo (2015) |
| 26  | Qufeng Runfei Granules | Expelling wind and ventilating lung, regulating Qi and resolving phlegm, activating blood and dredging collaterals, relieving wind and suppressing cough | CT, JC, HH, BQ, JC, QZ, SG, KXR, ZZ, YY, QH, BQ, GC | Wind pathogen adhering the lung | Shen, Yu, & He (2017) |
| 27  | Jiawei Zhisou Powder-A<sup>a</sup> | Cold-dispelling, warming and moistening, dispelling wind and resolving phlegm | ZW, BB, JC, BQ, CT, DL, JJ, FL, CP, Pneumoniae Rhizoma Praeparatum (Fabanxia, FBX), PPF, WWZ, GC | Wind pathogen invading the lung | Qin & Yao (2020) |
| 28  | Zhisou Powder and Jade Screen Powder | Reinforcing healthy Qi and eliminating pathogenic factors | BB, ZZ, BB, JC, CP, Hqi, Atractylodes Macrocephala Rhizoma (Baizhiu, BZ), FF, GC | Wind pathogen adhering the lung | Zha (2017) |
| 29  | Juishou Tang | Expelling wind and ventilating lung, resolving phlegm and relieving cough | MH, ZZ, KD, NBZ, BB, BB, KXR, CT, GC, HH, Zingiberis Rhizoma Recens (Shengjiang, SJ), WWZ | Wind pathogen adhering the lung | Yang (2019) |
| 30  | Eliminating Wind Cough Soup | Expelling evil without damaging healthy Qi | JJ, FF, ZZ, ZZ, BB, BQ, BB, Fritillariae Cirrhosae Bulbus (Chuanbeimu, CBM), KXR, FBX, CP, JJ, GC | Wind pathogen adhering the lung | Zhou (2016) |
| 31  | Xuafen-Zhishou Decoction-A<sup>a</sup> | Ventilating lung and expelling wind, relieving cough and resolving phlegm | MH, KXR, NBZ, CT, BQ, SBP, ZZ, Herba Lophiiungis Affinis (Foecao, FEC), QX, ZGC, Xanthii Herb (Cangercao, CEC), JJ | Wind pathogen invading the lung | Wang (2013b) |
| 32  | Chanhu Zhike Oral Liquid | ?<sup>a</sup> | CT, QH, ZZ, BB, BQ, JC, CP, YY, KD, FL, GC | Wind pathogen invading the lung | Li & Guo (2014) |
| 33  | Zhike Gubiao Soup | Regulating lung and lowering Qi, resolving phlegm and relieving cough, replenishing qi and consolidating exterior | BB, BB, ZZ, ZZ, CP, JJ, YY, HQ, BZ, Lonicerae Japonicae Flos (Jinyinhua, JYH), Anemarrhenae Rhizoma (Zhumu, ZM), SG, ZZ, KXR, GC | Wind pathogen invading the lung | An (2009) |
| 34  | Shufeng Zhike Mixture | Dispelling wind and ventilating lung, relieving cough and resolving phlegm | JG, BB, JC, CT, Citri Exocarpium Rubrum (Juhong, JH), ZZ, JJ, BB, Eucalyptus (Digupi, DD), GC | Wind pathogen adhering the lung | Feng (2016) |
| 35  | Shufeng Xuanrun TCM Decoction | Dispelling wind and moistening | SY, CT, QH, FF, JC, KXR, Glehniae Radix (Nanshashen, NSB), CBM, Polysychnane Radix (Yuanzhi, Yzhi), ZW, BB, XHF, NBZ, GC | Wind pathogen adhering the lung | Wei, Shi, & He (2020) |
| 36  | Xuafen Zishou Decoction-B<sup>a</sup> | Dispelling wind and evil, ventilating lung and relieving cough | MH, ZH, ZZ, JJ, JC, BQ, KXR, CP, CT, DL, WWZ, ZGC | Wind pathogen invading the lung | Sun (2019) |
| 37  | Jiawei Zishou Decoction | Dispelling wind and evil, ventilating lung and relieving cough | ZZ, BB, JJ, FF, QH, CP, FL, BZ, DL, JC, PPF, GC | Wind pathogen invading the lung | Yang (2020) |
| 38  | Qingfei Zishou Tang | Dispelling wind and ventilating lung, relieving cough and resolving phlegm | Concha Meretricis seu Cycline (Haigeqiao, HQQ), ZSY, Alpinia officinarum Miq. (Shachen, SS), Ophiopogonis Radix (Maidong, MD), BB, JJ, FF, JC, MH, ZGC | Wind pathogen invading the lung | Wei (2018) |
| 39  | Feiketing Mixture | Dispelling wind and evil, ventilating lung and depressing Qi | JJ, QH, ZZ, BB, BQ, GC | Wind pathogen invading the lung | Wang (2017) |
| 40  | San-ao Wendan Decoction | Dispelling wind and ventilating lung, relieving cough and resolving phlegm, drying dampness and transporting spleen, compensation existing in elimination | MH, KXR, CP, Pneumoniae Rhizoma Praeparatum Curum Alumine (Qingbaixia, QBX), FL, Aurantii Fructus Immaturus (Zhihsi, ZS), Bambusae Caulis in Taenias (Zhu, ZR), GC, SG, FF, CT | Wind pathogen invading the lung | Yang (2019a) |
| No. | TCM prescriptions | Efficacy | TCMs compositions | Syndrome types | Refs. |
|-----|------------------|----------|------------------|----------------|-------|
| 41  | Shufeng Jiangqi Decoction | Dispelling wind and ventilating lung, depressing Qi and relieving cough | ZSY, CH, QH, ZQ, ZS, HP, XFH, ZW, KDH, GC | Wind pathogen lurking the lung | Ding, Yang, Li, & Wang (2021) |
| 42  | Xuanfei Zhisou Decoction-C^a | Expelling wind and ventilating lung, resolving phlegm and relieving cough | ZW, JJ, CT, KXR, MH, JG, FBX, CP, ZQ, FL, GC | Wind pathogen tightening the lung | Wang (2011) |
| 43  | Qingfei Yin | Resisting inflammation, preventing cough and relieving spasms | JYH, Sophorae Tonkinensis Radix et Rhizoma (Shandoung, SDC), SG, Physalis Calv壁画 Fructus (Jindenglong, JX), CT, NBZ, JG, HQ, XX | Wind pathogen tightening the lung | Wu (2013) |
| 44  | Mulberry Apricot Decoction | Dispelling wind and venting lung, clearing throat and relieving cough | SY, KXR, BB, ZW, ZSZ, ZBM, BSS, JJ, JJ, GC | Wind pathogen and stagnated heat | Huang (2016) |
| 45  | Xuanfei Zhisou Decoction | Straightening out the lung Qi, ventiling lung and relieving cough, relieving asthma and resolving phlegm | KXR, JJ, NBZ, MH, YXC, ZZ, QH, SBP, JYH etc. | Wind pathogen accumulation in lung | Geng (2018) |
| 46  | Keping Decoction | Ventilating lung and expelling wind, relaxing throat and nourishing fluid production | MH, JJ, CT, XQX, XFH, GL, NBZ, KDH, SS, XS, CS, GC | Wind pathogen guessting lung and consumption of fluid | Chen, Huang, Lian, & Huang (2010) |
| 47  | Xuanfei Zhisou Decoction-A^a | Dispelling wind and cold, ventiling lung and relieving cough | MH, KXR, SJ, JJ, KDH, FBX, BB, ZSY, ZGC | Wind-cold adhering the lung | Hu et al. (2016) |
| 48  | Guizi Mahuang Each Half Tang | Relieving exterior syndrome and ventilating lung, harmonizing nutrient and defense | MH, Cinnamomi Ramulus (Guizhi, GZ), KXR, Paeoniae Radix Alba (Baishao, BS), ZGC, SJ, Jujubae Fructus (Dazao, DZ) | Wind-cold adhering the lung | Zhuge, Wang, Yu, & Mao. (2017); Wang, Wang, Mao, & Chen (2019) |
| 49  | Wind-Cold Formula | Evacuating wind and cold, dispersing and lowering lung Qi, resolving phlegm and relieving cough | MH, KXR, SJ etc. | Wind-cold adhering the lung | Wu et al. (2013) |
| 50  | Fangfeng Sanao Decoction | Dispelling wind and cold, ventiling lung and relieving cough | FF, MH, ZSY, KXR, BQ, JJ, WWZ, BX, XX, GC | Wind-cold adhering the lung | Zhang (2019b) |
| 51  | Jiawei Zhisou Powder | Dispelling wind and venting lung, relieving urgent state and spasms, relieving sore throat and cough | XPH, MH, BX, BS, JJ, GC, KXR, ZSY, ZW, BB, BQ, CT | Wind-cold adhering the lung | Wang (2016) |
| 52  | Itching and Cough Relieving Decoction-B^b | Nourishing Yin and clearing lung, resolving cough and resolving phlegm, expelling wind and relieving itching, relieving sore throat and suppressing coughing | MHD, GC, CT, QX, KXR, BSS, ZBM, CS, DP, XPH, JJ, XQX, ZL, BX, XS, DS, JQM, BQ, KXR, BXQ, ZW, SG, ZQG, JG, JJ, YXC, TJK, FF, Zingiberis Rhizoma (Guangjiang, GJ), XX | Wind-cold adhering the lung | Zheng (2017) |
| 53  | Shegan Mahuang Decoction | Dispelling cold and relieving exterior syndrome, resolving phlegm and relieving cough, warming lung to reduce watery phlegm, strengthening the body resistance in middle-Jiao | SG, MH, SJ, XX, ZW, KDH, WWZ, BX, DZ | Wind-cold adhering the lung | Wang et al. (2017) |
| 54  | Chanyi Jiegeng Erchen Decoction | Expelling wind and dispensing cold and lowering lung Qi, resolving phlegm and relieving cough | CT, JC, FBX, CP, FL, GC, JJ etc. | Wind-cold adhering the lung | Cheng & Li (2013) |
| 55  | Sanju Kechuan Oral Liquid | Expelling wind and dispensing cold, widening chest and resolving phlegm, ventilating lung and relieving cough | MH, KXR, GL, Alliis Macrostemonis Bulbus (Xiebai, XB), FBX, JC, GC etc. | Wind-cold adhering the lung | Li et al. (2020) |
| 56  | Modified Xuanfei Ningsou Decoction-C^a | Dispelling wind and heat, ventilating lung and relieving cough | GT, Jhua, JJ, KXR, QH, BQ, SBP, ZW, GC, MH, ZSY | Wind-cold adhering the lung | Tao, Yu, Zhai, Zhao, & Wai (2019) |
| 57  | Zihua Wenfei Zhisou Formula | Warming lung and resolving lung congestion, dispelling wind and relieving cough | ZW, KDH, JJ, the kernels of Mangifera indica L. (Mango, MGH), SG, JJ | Wind-cold adhering the lung | Lin, Zhou, Lu, Li, & Tao (2019) |
| 58  | Shufeng Zhike Decoction-A^a | Expelling wind and venting lung and relieving cough | JJ, ZSY, KXR, ZQ, DL, CT, HP, JG, BS, GC, WWZ etc. | Wind-cold adhering the lung | Chen (2015) |
| 59  | Zhike Prescription-A^a | Expelling wind, ventilating lung and relieving cough | ZSY, FF, Phetetma aspergillum E. Perrier (Guangdilong, GDL), CT, QH, NBZ, ZSZ, XFH, JC, GC, MH, KXR, ZW, KDH | Wind-cold attacking the lung | Gu (2021) |
| 60  | Jiawei Zhisou Powder-B^b | Expelling wind and dispensing cold, dispelling wind and evil | Paris polyphylla Smith var. chinensis (Franch.) J. Gyoeiyiizihiiku, QYXZH, ZZ, BB, QH, BQ, JC, CP, Chebulae Fructus (Kezi, KZ), KXR, Canarri Fructus (Qingguo, QG), ZSZ, GC, JJ | Wind-cold attacking the lung | Pan (2009) |
| 61  | Jiawei Zhisou Powder-C^a | Ventilating lung and relieving cough, dispelling wind and evil | MH, KXR, ZW, BB, JG, BQ, JJ, CP, ZGC | Wind-cold attacking the lung | Wu, Yang, & Wang (2017) |
| 62  | Chaijin Decoction | Reconciling external evil of exterior and interior, warming cold retained fluid to relieve cough and asthma, using diffusing and dissipating together with convergence and descending, attacking evil without damaging healthy Qi | CH, HQ, FBX, Codonopsis Radix (DangShen, DangS), Rehmanniae Radix Praeparata (Shud, SD), Angelicae Sinensis Radix (Dangguo, DG), FL, CP, Scolopendru (Wugong, WC), DL, JJ, XX, WWZ, GC | Wind-cold attacking the lung | Jin, Liu, & Ye (2019) |
| 63  | San’ao Tablet | Divergenting wind and cold, warming lung and relieving cough | MH, KXR, GC, SJ | Wind-cold attacking the lung | Fu (2017) |
| 64  | Dongwan Zhike Granules | Expelling wind and dispensing cold, ventilating lung and relieving cough, simultaneous treatment of lung and nose | MH, XX, SJ, ZW, KDH, FBX, the flowers of Magnoliaceae Flos (Xinyihua, XYH), Xanthii Fructus (Cangerzi, CEZ) | Wind-cold attacking the lung | Wang (2013a) |

(continued on next page)
| No. | TCM prescriptions | Efficacy | TCMs compositions | Syndrome types | Refs. |
|-----|-------------------|----------|------------------|----------------|-------|
| 65  | Liuwei Decoction | Expelling wind and ventilating lung, moistening lung and relieving phlegm, lowering lung Qi | Jl, FF, HQ, JG, BH, JC, KXXR, BB, MHD, WWZ, GC etc. | Wind-cold attacking the lung | Yu (2012) |
| 66  | General Xuan Shang | Warmly dredging purgation, ventilating lung and relieving cough | Acori Lateralis Radix Praeparata (Fuzi, FZ), GJ, Ginseng Radix et Rhizoma (Renshen, RS), Rheum Radix et Rhizoma (Dahuang, DH), KXXR, ZZV, ZGC | Wind-cold invading the lung | Zhang (2017) |
| 67  | Xiaoxionglong Mixture | Relieving exterior syndrome and reducing watery phlegm, relieving cough and asthma | MH, CZ, BS, GJ, XX, BX, WWZ, ZGC | Wind-cold invading the lung | Zhang, Tang, Fang, & Yu (2017); Chinese Pharmacopoeea Commission (2020) |
| 68  | Kechuang Liuwei Mixture | Warming kidney and tonifying fire, warming lung and dispelling cold, ventilating lung and relieving asthma | MH, FZ, XX, HQ, Saxifraga stolonifera (L.) Meerh. (Huercao, HEC), Persicae Semen (Taoren, TR) | Wind-cold invading the lung | Li & Zhang (2018) |
| 69  | Shegan Zhisou Decoction | Regulating lung Qi to relieve cough | SG, Perillae Caulis (Sugeng, Sgeng), ZW, QH, WWZ, ZGC | Wind-cold invading the lung | Huang, Chen, Lu, & Huang (2015) |
| 70  | Guizhi Wenfei Huatan Decoction | Harmonizing nutrient and defense when the disease is on the exterior, harmonizing Yin and Yang when the disease is on the interior. | Guizhi Wenfei (Cangzhuzhu, CZ), CP, FL, ZW, BX, Acori Tatarinowii Rhizoma (Taoren, TR), SF, GG | Wind-cold invading the lung | Xiao, Hu, Sun, & Liu (2021) |
| 71  | Guizhi Wenfei Huatan Decoction | Preventing cough and resolving phlegm, harmonizing nutrient and defense, eliminating sweat and dispelling evil without damaging healthy Qi | MH, CZ, ZW, FBX, SJ, Asari Radix et Rhizoma (Xixin, XX), KDHI, TJK, Aconiti Lat. Rad. (Asa, ADAC) | Wind-cold closing the lung | Wang (2013b) |
| 72  | Xuanfen-Zhisou Decoction | Ventilating lung and expelling wind, relieving cough and resolving phlegm | MH, KXXR, NBZ, CT, BQ, SBP, ZW, FEC, QX, ZGC, BB, XX, Zhihu | Wind-cold tightening the lung | Meng (2015) |
| 73  | Zisou Powder plus Xing Su Powder | Relieving cough and asthma, ventilating lung and resolving phlegm,dispelling wind and heat | MH, HQ, CT, BH, JC, JYH, KXXR, ZBM, GC, etc. | Wind-dryness injuring the lung | Yang, Wang & Wang (2020) |
| 74  | Zisou Powder plus Xing Su Powder | Dispelling wind and heat, moistening lung and relieving cough | ZSY, KXXR, JC, JG, GC, WWZ, ZBM, SBP, CT, NIBZ | Wind-dryness injuring the lung | Du, Zeng, Liu, Huang, & Zeng (2020) |
| 75  | Sangxing Decoction-C | Clearing and relieving dryness-heat, moistening lung and relieving cough | SY, KXXR, NSS, ZBM, DDC, Gardeniae Fructus (Zhuzi, ZZ), FF, CT, Luffiae Fructus Retinervus (Sigualuo, SGL), MH, HQ, CT, SX, DM, FC, LC, GC, SX, SG, LZ, BX, XS, CS, DP, ZGC, MH, PPY, GC | Wind-dryness injuring the lung | Liu & Xie (2016) |
| 76  | Mulberry Apricot Soup | Relieving exterior syndrome without damaging healthy Qi, expelling wind without damaging body fluid, removing dryness and restoring fluid | BB, SBP, KDH, HQ, JG, KXXR, ZBM, GC, etc. | Wind-dryness injuring the lung | Qiu (2015) |
| 77  | Shufeng Runfei Method | Expelling wind and moistening lung | XKR, BB, WWZ, JG, QH, CBM, KDH, FF, GC, QQ, CT, JH, CT, SF, JY | Wind-dryness injuring the lung | Meng (2015) |
| 78  | Shufeng Runfei Method | Expelling wind and moistening lung | SY, KXXR, PYY, MD, ZW, BSS, CT, FF, JG, MHD, GC, SF, ZJ, SF, KS, ZGC, MH, HQ, CT, SF, ZGC, GC | Wind-dryness injuring the lung | He (2018) |
| 79  | Qingzao Jiuhei Decoction | Moistening dryness and relieving cough | BB, SBP, KDH, HQ, JG, KXXR, CBM, NSS, GC, ZGC, MH, HQ, CT, SF, ZGC, GC | Wind-dryness injuring the lung | Chen (2017) |
| 80  | Qingfei Runzao Decoction-A | Eliminating phlegm and relieving cough | BB, SBP, KDH, HQ, JG, KXXR, CBM, NSS, GC, ZGC, MH, HQ, CT, SF, ZGC, GC | Wind-dryness injuring the lung | Chen (2017) |
| 81  | Qingfei Runzao Decoction-B | Clearing lung and resolving phlegm, moisturizing dryness and relieving cough | BB, SBP, KDH, HQ, JG, KXXR, CBM, seeds of Zanthoxylum bungeanum Maxim (Jiaomu, JM), SS, GC, ZGC, MH, HQ, CT, SF, ZGC, GC | Wind-dryness injuring the lung | Wang, Li, & Peng (2013) |
| 82  | Jingsang Zhihe Mixture | Relieving cough and asthma, moistening dryness and relieving cough, promoting blood circulation and removing blood stasis | SY, KXXR, ZBM, BSS, BB, ZW, JG, JC, CT, HQ, ZSY, ZGC, MH, PPY, GC | Wind-dryness injuring the lung | Gong (2017) |
| 83  | Itching and Cough Relieving Decoction-D | Nourishing Yin and clearing lung, resolving wind and phlegm, expelling wind and resolving phlegm, expelling wind and relieving itching, resolving sore throat and suppress coughing | MHD, GC, CT, SX, KXXR, BSS, ZBM, CS, DP, XPFH, SJ, XCO, ZL, BX, XS, DS, JQBM, BQ, KXXR, BXQ, WWZ, ZC, ZQG, JG, JC, YXC, TJK, FF, SS, MD | Wind-dryness injuring the lung | Zheng (2017) |
| 84  | Modified Xuanfei Ningsou Decoction-D | Dispelling wind and heat, ventilating lung and regulating cough | GT, BH, SY, Juha, JG, KXXR, QH, BQ, SBP, ZW, GC, BSS, XS | Wind-dryness injuring the lung | Tao, Yu, Zhao, & Wan (2019) |
| 85  | Qingfei Runzao Zhisou Decoction | Ventilating lung and resolving cough | BB, KDH, SBP, CBM, NSS, HQ, KXXR, GC, JG | Wind-dryness injuring the lung | Zhang (2019a) |
| 86  | Qingfei Runzao Zhisou Decoction | Moistening dryness evil, recovering Qi-Yin and stopping coughing | SY, KXXR, ZBM, SS, PYY, BB, ZW | Wind-dryness injuring the lung | Wang, Ju, & Li (2012) |
| 87  | Sangxing Decoction-A | Dispelling wind, moistening lung and removing dryness | SY, KXXR, ZBM, BSS, ZZ, DDC, peel of Pyrus (Lipi, LP) | Wind-dryness invading the lung | Huang (2018a) |
| 88  | Varied Sangxing decoction-B | Dispelling wind and reducing dryness, nourishing Yin and moistening lung | SY, KXXR, ZBM, BSS, ZZ, DDC, MD, ZM, PYY, CX | Wind-dryness invading the lung | Lan (2017) |
| 89  | Varied Sangxing decoction-C | Dispelling wind and reducing dryness, nourishing Yin and moistening lung; clearing lung and resolving phlegm, lowering lung Qi | SY, KXXR, ZBM, BSS, ZZ, DDC, MD, ZM, PYY, CX, HQ, HGQ, SBP | Wind-dryness invading the lung | Lan (2017) |
| No. | TCM prescriptions | Efficacy | TCMs compositions | Syndrome types | Refs. |
|-----|-------------------|----------|------------------|----------------|-------|
| 90  | Sanye Tang-A      | Dispelling wind and ventilating lung, moistening lung and relieving cough | Ginseng Folium (Renshenye, RSY), Saurupoi Folium (Longliye, LLY), PPY, the shell of Castanea mollissima Bl. (Fenglike, FLK), KXR, ZBM, ZW, JG, MHD, FF | Wind-dryness invading the lung | Xia & Li (2017) |
| 91  | Shufeng Xuanfei Zhike | Dispelling wind, ventilating lung and relieving cough | RSY, LLY, PPY, FYK, KXR, ZBM, ZW, JG, MHD, FF, BB, ZGC Papaveris Pericarpium (Yingsuake, YSK), BB, BQ, SBP, JG, PPY, 1-Menthol (Bohenao, BHN) etc. | Wind-dryness invading the lung | Xia (2018) |
| 92  | Qiangli Pipa Lu   | Nourishing Yin and restraining lung Qi, preventing cough and eliminating phlegm | | Wind-dryness invading the lung | Li & An (2014) |
| 93  | Zhike Prescription-B | Expelling wind, ventilating lung and relieving cough | ZSY, FF, GDL, CT, QH, NBZ, ZSZ, XFH, JG, GC, JYH, Forsythiae Fructus (Lianqiao, LQ), HQ, ZBM | Wind-heat invading the lung | Gu (2021) |
| 94  | Xinghuang Zhike Mixture | Clearing lung, relieving cough and resolving phlegm | HQ, KXR, BX, QH, ZSZ, JJ | Wind-heat invading the lung | Li, Guo, Yu, & Ji (2018) |
| 95  | Xuanfei-Zhisou Decoction-B | Ventilating lung and expelling wind, relieving cough and resolving phlegm | MH, KXR, NBZ, CT, BQ, SBP, ZW, FEC, QX, ZGC, Jhua, BH, LQ | Wind-heat invading the lung | Wang (2013b) |
| 96  | Sangju Yin | Clearing heat and dispelling wind, clearing lung and resolving cough | JG, SY, LQ, Jhua, LG, KXR, BH, GC | Wind-heat invading the lung | Yu (2017) |
| 97  | Qingfei Zhike Decoction | Dispelling wind and cold, ventilating lung, resolving phlegm and relieving asthma | MH, KXR, Gypsum Fibrosum (Shengshigao, SSC), ZGC, JG, CP, BB, ZW, BQ, CT | Wind-heat invading the lung | Song (2012) |
| 98  | Shufeng Zhike Decoction-B | Clearing heat and dispelling wind, depressing Qi and relieving cough | SY, HQ, JJ, KXR, CT, BH, BQ, QH, ZW, PPY, ZBM, GC | Wind-heat invading the lung | Han (2016) |
| 99  | Sangye Zhike Granules | Expelling wind and facilitating Qi, resolving phlegm and relieving cough | SY, KXR, JG, QH, PPY, ZBM, BB, MH, HQ, JYH, GC | Wind-heat invading the lung | Zhu & Liu (2001) |
| 100 | Erchong Ningsou Decoction | Dispensing Qi and resolving exterior syndrome | SY, Jhua, JG, KXR, CT, CT, HG, BH, LQ, HQ, SBP, DGP, ZW, KDH, GC | Wind-heat invading the lung | Chen & Zhao (2016) |
| 101 | Yure Prescription | Expelling  wind and strengthening body resistance, clearing heat and resolving phlegm, ventilating lung and relieving cough | BB, ZW, JG, QH, JH, Retinervus Citri Fructus (Julius, JI), HQ, JG, CS, HQ, GC | Wind-heat invading the lung | Wang & Huang (2015) |
| 102 | Itching and Cough Relieving Decoction- C | Nourishing Yin and clearing lung, relieving cough and resolving phlegm, expelling wind and relieving itching, relieving sore throat and suppress coughing | MHD, GC, CT, QX, KXR, BSS, ZBM, CS, DP, XFII, JH, XCC, ZL, BX, BS, DS, JQMM, BQ, KXR, BXQ, ZW, SG, ZQCC, JG, JC, YXCC, TJK, FF, SBP, Ginkgo Semen (Baiguo, BG) | Wind-heat invading the lung | Zheng (2017) |
| 103 | Modified Xuanfei Ningsou Decoction-A | Clearing heat and venting lung, ventilating lung and relieving cough | GT, BH, SY, Jhua, JG, KXR, QB, BQ, SBP, ZW, GC | Wind-heat invading the lung | Tao, Yu, Zhai, Zhao, & Wan (2019) |
| 104 | Shufeng Qingfei Zhike Decoction | Expelling wind, clearing and moistening lung | ZW, BB, QH, JJ, FF, CT, KDH, PPY, LG, JQMM, ADC, GC | Wind-heat invading the lung | Kang (2016) |
| 105 | Sangju Yin Combined with Xuanjiang Herb Pairs | Expelling wind and heat, ventilating lung, resolving cough and reducing phlegm | SY, KXR, GC, BQ, JG, BB, ZW, CP, JJ, DBZ, KDH, MH, ZSZ, JG, KXR, GC | Wind-heat invading the lung | Li (2019a) |
| 106 | Sangiu Shenmai Tang | Dispelling wind and ventilating lung, nourishing Yin and moisturizing dryness | SY, Jhua, LQ, KXR, Phymgmitis RHizoma (Lugen, LG), JG, BSS, Polygonati Odorati RHizoma (Yuzhu, YZ), MD, THF, CT, GC | Wind-heat-Yin deficiency | Zeng (2018) |
| 107 | Sangmei Zhike Granules | Dispersing wind pathogen that has not been exhausted on the exterior, clearing and moistening endogenous dryness and heat | SBP, WM, SY, Jhua, JG, KXR, BS, BB, PPWZ, ZC, CT, ZGC | Wind-heat-Yin deficiency | Li, Qin, Cui, Bi, & Jin (2018) |
| 108 | Fengketing | Expelling wind and clearing evil, tonifying kidney and relieving cough | MH, KXR, GC, BQ, JG, BB, ZW, CP, JJ, DBZ, LG, CT | Wind-heat adhering the lung | Zhao & Zeng (2013) |
| 109 | Chanqin Granules | Expelling wind and ventilating lung, regulating Qi and resolving phlegm, activating blood and dredging collaterals, relieving spasm and cough | CT, JC, CH, HQ, BQ, JJ, ZG, QX, KXR, ZW, DS, YJ, HQ, BQ, GC | Wind-heat phlegm adhering the lung | Lv (2019) |
| 110 | Sanye Tang-B | Dispelling wind and ventilating lung, moistening lung and relieving cough | RSY, LLY, PPY, FYK, KXR, ZBM, ZW, JG, MHD, FF | Wind-phlegm adhering the lung | Zhang (2015) |
| 111 | Qufeng Wenfei Huatan Granules | Expelling wind, ventilating lung and defense, invading to stomach and kidney | JJ, JG, QH, ZW, FL, XX, WWZ, Pinelliae RHizoma Praeparatum Cum Zingibere et Alumine (Jiangbanxia, JBX), GJ, CP, CT, GC Balanophyllia (Eguanshi, EGS), MH, DG, FL, Tricosanthis Semen (Gualouren, GLR), ZSZ, SY, JH, FBX, ZBM, KXR | Wind-phlegm adhering the lung | Gao & Luo (2021) |
| 112 | E Li Soup | Expelling wind and ventilating lung, resolving phlegm and regulating Qi, tonifying lung and strengthening spleen, nourishing blood and promoting blood circulation | | Wind-phlegm adhering the lung | Qin (2011) |
| 113 | Modified Jinfeicao Powder | Sour and sweet nourishing Yin, moisturizing and calming, ventilating lung and defense, invading to stomach and kidney | ZGC, XX, XFHI, HQ, BZ, BS, DanS, JJ, FF, JF, WWZ | Wind phlegm and persistent pulmonary disorder | Zhao & Huang (2016) |
| 114 | Qufeng Xuanfei Zhike Prescription | Expelling wind, ventilating lung and defense, invading to stomach and kidney | FF, JJ, KXR, MH, GT, DL, KDH, ZW, GL, ZBM, ZQ, JG, GC | Wind phlegm resistance | Yuan, Li, & Chi (2016) |
| 115 | Jiubaoan Pill | Dredging triple energizer, regulating and invigorating ascension and descent, | CH, HQ, DanS, BX, Rehmanniae Radix (Shendihuang, SDH), ZW, KDH, QB, CP, | Wind phlegm accumulation in lung | Yang, Yao, Shi, & Gu (2016) |

(continued on next page)
Table 1 (continued)

| No. | TCM prescriptions | Efficacy | TCMs compositions | Syndrome types | Refs. |
|-----|-------------------|----------|-------------------|----------------|-------|
| 116 | Kaiyu Zhike Granules | dredging exterior and interior syndrome | Clematis Radix et Rhizoma (Weilingxian, WLX), YJ, SCP, BH | Wind phlegm lying depressed in the lung | Li (2018b) |
| 117 | Shufeng Lifei Decoction | Dispersing wind and ventilating lung, regulating Qi and relieving cough | MH, CT, ZSY, QB, NFZ, PB, DL, JG, ZBM, BB, WWZ | Fengsheng clonic acute | Feng, Zhang, Lian, Li, & Wang (2017) |
| 118 | Xuanye Zhike Tang-A' | Dispersing wind and ventilating lung, resolving spasm and cough | ZSY, JG, KXR, SBP, CT, ZW, Citri Grandis Exocarpium (Huajihong, HJH), MH, GC | Fengsheng clonic acute | Li (2018a) |
| 119 | Xuanye Zhike Tang-B' | Ventilating lung and relieving cough | ZB, ZBM, MH, KXR, CT, JG, CT, FF, WWZ, WM, FL, BZ, GC etc. | Fengsheng clonic acute | Shan & Chen (2017) |
| 120 | Shema Sanchong Decoction | Dispersing wind and ventilating lung, resolving spasm and cough | SG, MH, JG, KXR, ZW, BB, JC, CT, DL, GC, WWZ | Fengsheng clonic acute | Guo & Lei (2016) |
| 121 | Zhike Prescription-C' | Expelling wind, ventilating lung and relieving cough | ZSY, F, GDL, CT, QT, QB, ZB, ZSY, XHJ, GC, CMB, XS, MD, BSS | Dryness evil damaging the lung | Gu (2021) |
| 122 | Sangxing Zhike Powder | Clearing and relieving dryness-heat, moistening lung and relieving cough, resolving phlegm and preventing asthma | SY, KXR, ZSB, SBP, BSS, ZQ, BB, JG, LQ, KDH, ZS, JC, MHD | Dryness evil damaging the lung | Kong (2020) |
| 123 | Runfei Zhike Decoction-A' | Nourishing Yin, moistening lung and relieving cough | Asparagus Radix (Taizhishen, TD), MD, SG, Lithi Bulbus (Baihe, Bhe), YJH, NBZ, XYC, JG, Polygony light Rhizoma (Huangjing, HJ), ZW | Dryness evil damaging the lung | Liao, Li, & Zhu (2014) |
| 124 | Xuanfei-Zhiou Decoction-D' | Ventilating lung and expelling wind, relieving cough and resolving phlegm | MH, KXR, NBZ, CT, BQ, ZB, WWZ, FCL, QX, ZGC, MD, BIhe | Dryness evil damaging the lung | Wang (2013b) |
| 125 | Sangpi Dougen Decoction | DB | SBP, DGP, SDG, KXR, ZJ, ZB, ZBM, ZM, LG, GC | Dryness evil damaging the lung | Liang (2013) |
| 126 | Baihe Gujin Decoction | Gradually filling Yin fluid, nourishing lung and kidney, eliminating virtual fire automatically | BHe, SD, SDG, DB, GS, GC, JG, XS, Xistumia (Beimu, BM), MD, Dioscorea rhizoma (Shanao, Syao), BZ, WWZ | Deficiency of both Qi and Yin | Wang & Huang (2016) |
| 127 | Nourishing Yin and Supplementary Qi Method | Nourishing Yin and Supplementary Qi, moistening lung and relieving cough | BSS, Hqi, THF, ZBM, LS, LQ, NBZ, Inulae Herba (Jinfeicao, JFC), BS, BH, ZGC | Deficiency of both Qi and Yin | Yu, Fu, Chen, & Lou (2017) |
| 128 | Supplementing Qi and Nourishing Yin and Moistening Lung Method | Replenishing Qi and nourishing Yin, moistening lung and relieving cough | Hqi, Pseudostellariae Radix (Taizhishen, TZZ), BSS, NS3, MD, BB, KDH, ZW, etc. | Deficiency of both Qi and Yin | Wang (2014) |
| 129 | Zhike Pingchuang Recipe Granules | Strengthening spleen and resolving phlegm, ventilating lung regulating Qi, dredging collaterals and quenching wind | TZS, CP, JC, BZ, DL, FBX, FF, GC | Phlegm-dampness accumulation in lung | Guo (2015) |
| 130 | Modified Erchen Decoction | Eliminating dampness and resolving phlegm, regulating and depleting Qi, tonification and purification in combination | CP, FBX, FL, GC, Citri Saracordic Fruits (Foshou, FS), FF, YZhi, Oxzy prestis pekteratum (Foqiu, FQ), HX, Yie, Ma murraya (Xinjia, XNJ), Endothelium Corneum (Jinjejunyin, JFJ), Arecaeq Semen (Binglang, BIL), WWZ, CEZ etc. | Phlegm-dampness accumulation in lung | Xu (2017) |
| 131 | Banxia Pia Syrup | Eliminating dampness and resolving phlegm, ventilating lung and relieving cough | BX, PFP, JG, MH, YZhi, GC, ZW | Phlegm-dampness accumulation in lung | Li, Wu, & Liu (2020) |
| 132 | Xuanbai Chengqi Decoction | Dredging the Fu organs and purging lung | SSG, ZH, Trichosanthis Pericarpium (Gualou, GLP), KXR, HQ, CMB, GC | Phlegm-heat lying depressed in the lung | Li (2018c) |
| 133 | Sangpi Zhike Mixture Formula | Clearing heat and resolving phlegm, relieving cough and sore throat | SY, Jhua, KXR, JG, BB, ZBM, LS, LG, BH etc. | Phlegm-heat lying depressed in the lung | Du & Zhang (2021) |
| 134 | Influenza No. 3 Formula | Clearing heat and resolving phlegm, ventilating lung and relieving cough | JQHM, Trollius chinensis Bunge (Jinlianhua, JLM), CT, FPY, ZBM, KXR, NBZ, Isatisis Foliun (Daqingye, DQY), HQ, WWZ, GC | Phlegm-heat lying depressed in the lung | Han & Zhang (2010) |
| 135 | Yangyin Runfei Oral Liquid | Nourishing Yin and moistening lung, resolving phlegm and relieving cough, clearing heart and tranquilizing mind | Bhe, BB, MD, BSS, ZBM, SBP, JG, YHJ, PB, HQ, Polygoni Multiflorul Caulis (Shouwuteng, SWT), GC | Heat injuring to lung | Zhang et al. (2011) |
| 136 | Gansangju Granules | Preventing cough and eliminating phlegm | the roots of Saccharum officinarum (Ganjiehegen, GJGC), SY, JG, KXR, GC | Heat injuring to lung | Miao (2014) |
| 137 | Runfei Zhike Decoction-B' | Nourishing Yin and moistening lung, depressing Qi and resolving phlegm, ventilating wind and heat, ventilating lung and relieving cough | MH, KXR, BB, ZGC, MD, XS, JG, ZS | Dryness-heat injuring the lung | Zhang & Li (2020) |
| 138 | Xuanshan Ganju Tang Combined with Sanniuang Erchen Decoction and Zhishou Powder | Promoting fluid production and nourishing Yin, clearing lung and relieving cough, dispersing wind and dryness | MH, KXR, MD, XS, JG, SY, Centellae Herba (Jixuecao, JXG), CT, JG, JSZ, BB, GC | Dryness-heat injuring the lung | Huang, et al. (2019) |
| 139 | Jaimei Yingong San | Strengthening spleen and resolving phlegm, relieving cough and eliminating phlegm, tonification and purification in combination, mainly basing on supplementation | CP, FBX, FL, GC, ZW, KXR, JJ, BB, BQ, SJ | Spleen deficiency with dampness | Lin (2016) |
| 140 | Yangyin Qingfei | Nourishing Yin and clearing heat, | SDH, XS, Moutan Cortex (Danpi, DP), MD, | Yin-deficiency and dampness | Yang & Wei (2011) |

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The table continues with additional rows and columns providing detailed information about various TCM prescriptions, their efficacies, the TCMs compositions they involve, and the types of syndromes they address, along with references to studies supporting their effectiveness.
| No. | TCM prescriptions          | Efficacy                                      | TCMs compositions                          | Syndrome types                          | Refs.          |
|-----|----------------------------|-----------------------------------------------|--------------------------------------------|-----------------------------------------|---------------|
| 142 | Jiawei Xiebai Powder       | Clearing heat and nourishing Yin, mooring lung and resolving cough | DGP, SBP, BB, JC, ADC, MD, NSS, ZBM, Rhei, Hordei Fructus Germinatus (Mayia, MY), Massa Medicata Fermentata (Shenqu, SQ), GC | Lung-deficiency and lung-heat            | Li & Shu (2015) |
| 143 | Shenmai Injection          | Tonifying Qi and preventing exhaustion, nourishing Yin and promoting fluid production, activating pulse | RS, MD | Deficiency of lung Yin | Ren (2018) |
| 144 | Qinbai Qingfei Concentrated Pills | Clearing heat and resolving toxins, mooring lung and resolving cough | HQ, BB, ZW, MD etc. | Deficiency of lung Yin | Wang et al. (2018) |
| 145 | Jiawei-Yupingfeng-San Fang | Replenishing Qi and consolidating exterior, ventilating lung and resolving cough, clearing heat and relieving sore throat | Hqi, XS, JC, ZW, BZ, SG, QJ, JDL, FF, JG, JG | Linging pathogen due to deficient vital Qi | Yu (2016) |
| 146 | Fuzheng Zhike Fang         | Expelling wind and dispersing evil, treating both symptoms and root causes | Hqi, FF, BZ, DZ, JC, JJ, ZW, BB, QH, CP, GC, MHD | Linging pathogen due to deficient vital Qi | Dong (2019) |
| 147 | Yangyin Qingfei Decoction  | Nourishing Yin and moistening dryness, mooring lung and ventitating cough, relieving spasm and cough, clearing heat and resolving phlegm | SDH, ZBM, BS, BH, MD, XS, GC, LQ, BB, GT, QH, JYH, ZW | Yin deficiency syndrome | Jia (2020) |
| 148 | Long Cough Prescription    | Supporting Yang and relieving exterior syndrome, relieving spasm and cough, expelling wind and resolving phlegm | MH, FZ, XX, QJM, Erodii Herba Gerani Herba (Laquangcao, LGC), Prunelle Spica (Xiaqucao, XKC), GJ, GJ, WWZ, WM, CT, DL, JC, SS, MD, GCD | Yang deficiency and wind cough | Gulzat (2020) |
| 149 | Wumei Pills                | †                                              | NSS, SSG, WM, HQ, ZW, BB, GC, JG, Zanthoxyli Pericarpium (Huajiao, Hjiao), XX, HL | Upper heat and lower cold | Ye, Liu, Zeng, & Chen (2017) |
| 150 | Xiebai Powder and Shashen Maimendong Decoction | Nourishing Yin and clearing heat, moistening lung, resolving phlegm and relieving cough | SBP, DGP, BSS, MD, THF, GC, SY, PYY, SDH | The lung-dryness syndrome due to Yin deficiency | Sun & Zhang (2015) |
| 151 | Sangzi Zhike Decoction     | Clearing heat and resolving phlegm, ventilating lung and resolving cough | SBP, DGP, KXR, ZZS, JG, NBZ, BQ, CT, GC | Stagnated heat of lung | Lv, Bai, & Liu (2016) |
| 152 | Sufi Mixture               | †                                              | ZZS, JG, KDH, GL, QH, FBX, ZBM, Descurainia Semen Lepidii Semen (Tinglizi, TLZ), YX, ZW, Raphuni Semen (Laifu, LFZ), FL, GC | Spleen-deficiency and phlegm-turbid stagnation | Chen (2010) |
| 153 | Chaihu Jisang Decoction    | Eliminating evil                               | CH, HQ, TQS, BX, GC, DZ, SJ, QH, SBP, LQ, NBZ, JG | Shaoyang syndrome | Hong et al. (2018) |
| 154 | adding or subtracting Chaihu Jisang Decoction | Reconciling and dispelling exterior syndrome, resolving phlegm and relieving cough | CH, HQ, ZQ, JG, QJ, JG, ZBM, CX, SQ | Shaoyang and wind phlegm | Yang (2020) |
| 155 | Zibei Zhike Granules       | Promoting lung Qi, relieving cough and resolving asthma | BB, ZW, BQ, JG, FBX, JH, ZBM, XK, ADC, BH, GC etc. | Remaining evil adhering the lung Qi and Yin injury, lung dryness and fluid injury | Wan & Fan (2018) |
| 156 | Danggui Liuhuang Decoction Combined with Beimu Gualou Powder | Nourishing Yin and reducing fire, moistening lung and resolving phlegm | DG, HL, HQ, Phefolodent Chiinesis Cortex (Huangbai, HB), SDH, SD, HQ, ZBM, GL, THF, CP, JC, FL | | Wang & Zhao (2012) |
| 157 | Qingfei Huatan Granules    | Clearing and reducing lung fire, moistening dryness, resolving phlegm and relieving asthma | ZW, KDH, HQ, YXC, XK, MH, GC | Phlegm-heat congesting the lung | Li (2010b) |
| 158 | Qin-xia Qingreqingfeng Decoction Granules | Clearing heat and resolving phlegm, expelling wind and relieving cough | HQ, ZBM, YXC, FBX, CP, FL, HP, KDH, CT, XCG, LG, GC | Phlegm heat with wind | Li (2016) |
| 159 | Sijunzi Decoction and Zhishou Powder | Moistening dryness and promoting fluid production, clearing lung and resolving phlegm | DangS, FL, BZ, ZGC, JJ, JG, CP, BQ, ZW, KDH, BB etc. | Lung-spleen Qi deficiency | Ren & Meng (2018) |
| 160 | Varied Sangxing decoction-A | Moistening dryness and promoting fluid production, clearing lung and resolving phlegm | SY, KXR, ZBM, SS, MD, ZZ, LQ, ZW, KDH, BQ, GL, TZZ | Lung Qi being unclear, dryness burning the body fluid | Gong (2014) |
| 161 | Sangbai Lishi Decoction    | Clearing lung and resolving phlegm, relieving cough and asthma, clearing heat and drying dampness | SBP, HQ, JG, KXR, ZBM, PYY, ZZS, Cociis Semen (Yiyiren, YYR), ZZ, Amomum cravanh Pierre ex Gagnep (Baikouren, BKR), Artemisia Scopariae Herba (Yinchen, YC), GC | Lung heat with dampness | Li, Ma, Zheng, & Liu (2018) |
| 162 | Qingfei Zhike Tablets      | Moistening lung and depressing Qi, relieving cough and eliminating phlegm | GJ, Fructus Mori (SangShen, SangS), ZZ, Arnebiae Radix (Zicao, ZC), Pericarpium Citri Reticulatae (Jupi, JP), MH, SGL, WM, PYY, BS, YZ, BX, Cinnamomi Cortex (Rougui, RG), YX, NBZ, GC | Lung dryness and Yin deficiency | Lao (2015) |
| 163 | Daihe Powder Combined with Xiaochaihu | Clearing liver and relieving depression, clearing throat | QD, HQ, ZG, SJ, BH, HGQ, CH, JBX, DangS, DS, JG | Liver fire invading the lung | Luo & Ouyang (2017) |

(continued on next page)
The traditional efficacy of the compounds has not been reported yet.

The names of the prescriptions are the same, but the compositions of the single TCMs are different. They do not belong to the same prescription, so they are distinguished by A, B, C, and D.

the reflex process of cough, playing the role of relieving cough and prolonging the cough incubation period (Fan, Lu, Wang, & Wu, 2017).

studies have pointed out that ChanTui has antitussive, expectorant, antiasthmatic and spasmolytic effects (Zhang & Yang, 2014).

The traditional efficacies of the compounds have not been reported yet.

Jingjie is pungent and slightly bitter. It is slightly warm in nature, belonging to lung and liver meridians, and has the effects of expelling wind and relieving exterior (Jiang, 2018; Dong, 2019).

Jingjie has mild medicinal properties, and its main active components are volatile oil and flavonoids. Modern pharmacological studies have shown that Jingjie has anti-inflammatory, analgesic, antibacterial, antiviral, anti-tumor and hemostatic effects (Huang, Liu, Liu, Wang, & Ye, 2017).

5. Pharmacology of TCMs in clinical treatment of PIC

At present, the pharmacodynamic material basis of TCMs in treating PIC is not clear, but the modern pharmacological research shows that PIC pathogenesis is closely related to airway inflammation. Therefore, this paper discusses the possible pharmacodynamic material basis of TCMs in treating wind-induced PIC from the perspective of anti-inflammatory.
Flavonoids from Gancao have excellent anti-inflammatory activity. For example, Guan et al found that licorice flavone can improve lipopolysaccharide (LPS)-induced lung inflammation in mice, and its anti-inflammatory effect may be related to the inhibition of tumor necrosis factor-α (TNF-α) mRNA, IL-1β mRNA and TNF-α protein expression in lung tissues, and the regulation of oxidation/antioxidant response (Guan & Xie, 2009).

Amygdalin not only has antitussive effect, but also has certain anti-inflammatory activity. Hwang et al. treated LPS-induced RAW264.7 cancer cells with amygdalin, and the results showed that serum TNF-α and IL-1β, the molecular markers of inflammation, were inhibited (Hwang, Lee, Kim, Shim, & Hahm, 2008). Yang et al found that amygdalin could inhibit the inflammatory response of LPS-treated mouse BV2 glial cells, and its anti-inflammatory mechanisms might be by down-regulating the mRNA expression of LPS-induced cyclooxygenase-1 (COX-1), cyclooxygenase-2 (COX-2), and inducible nitric oxide synthase (iNOS), so as to inhibit the synthesis of prostaglandin E2 and the production of nitric oxide (NO) (Yang et al., 2007). Platycodin is the main active component of Jiegeng. Zhang et al. found that platycodin D can significantly inhibit the increase of airway eosinophils induced by ovum albumin (OVA) using mouse asthma model with OVA, and reduce the levels of inflammatory factors interleukin-4 (IL-4), interleukin 5 (IL-5) and interleukin-13 (IL-13) in bronchoalveolar lavage fluid (BALF), which has potential anti-allergic asthma effect (Zhang, Yang, Du, Yao, & Wang, 2015). He et al, established a mouse model of chronic bronchitis by smoking and inhaling concentrated ammonia water, then treated mice with platycodin for 30 d (He et al., 2013). The results showed that the expression of inflammatory cytokines IL-1β and TNF-α in lung tissues of mice in the treatment group was significantly reduced.

Su et al isolated nine asters saponins from Ziwan and evaluated their anti-inflammatory activities (Su et al., 2019). Among them, aster saponin B has the strongest inhibitory effect on LPS-induced production of NO in mouse macrophages. In RAW 264.7 cells activated by LPS, aster saponin B can down-regulate the levels of iNOS and COX-2 protein in a dose-dependent manner. Yang et al. obtained two new N-acetyldopamine tetrapolymers, cicadamide A and cicadamide B, from Chantui (Yang, Li, Li, & Wang, 2012). It was found that the above two compounds could inhibit NO release induced by LPS in RAW264.7 cells, indicating that both them possessed anti-inflammatory activities. Xu et al studied two N-acetyldopamine dimers in Chantui and found that they had antioxidant and anti-inflammatory activities (Xu et al., 2006). Alkaloids are the main active components of Baibu. Jung et al. found that tuberostemonine has anti-inflammatory effect on mice with acute pneumonia induced by cigarette smoke. Intraperitoneal injection of tuberostemonine in mice improved airway epithelial thickening and significantly inhibited the production of chemokines in lung tissue, indicating its anti-inflammatory activity (Jung et al., 2016a). Jung et al. also found that intraperitoneal injection of tuberostemonine N in mice with chronic obstructive pulmonary disease could significantly reduce the infiltration of inflammatory cells around bronchi and blood vessels, and significantly reduce the levels of inflammatory cytokines and chemokines in BALF, suggesting that tuberostemonine N has an anti-inflammatory effect on airway inflammation (Jung et al., 2016b).

Alkaloids are the main medicinal parts of Mahuang. Meng et al. separated the licorice flavonoids, saponins, and ephedra alkaloids in the experiment of studying the changes of main pharmacodynamic components and anti-inflammatory activities before and after the compatibility of Mahuang and Gancao (Meng, Pi, Song, Liu, & Liu, 2009). The mouse auricle swelling model induced by...
The phosphorylation of inhibitor κB alpha (IκB-α) mechanisms may be related to inhibiting the degradation of phosphorylation of inhibitor kappa B alpha (IκB-α) and the activity of nuclear factor kappa-B (NF-κB), thereby reducing the synthesis and release of inflammatory cytokines IL-1β and TNF-α.

The above may be the potential pharmacodynamic material basis of common single TCMs in treating PIC based on expelling wind pathogen under the guidance of anti-inflammatory activity, but it still needs further verification. As the molecular mechanism of wind pathogen could not be explained thoroughly at present by modern science, the mechanisms of the TCMs could not be simply ascribed to the anti-inflammatory effects. In the future, we can concentrate our eyes on this aspect and conduct in-depth research.

6. Discussion

6.1. Present situation of PIC

PIC belongs to the category of subacute cough, and its incidence has been high in recent years, which not only brings challenges to clinical treatment, but also brings certain economic burden to patients. In addition to its complicated etiology, difficult diagnosis, long course of disease, and easy recurrence, it is speculated that there is a certain relationship between air pollution and PIC. Although the correlation between air pollution and PIC is unknown at present, some studies have found that air pollution is related to the occurrence and development of residents’ upper respiratory tract infection (URTI) (Xia et al., 2017; Li et al., 2018; Tam et al., 2014), and PIC is closely related to URTI, which may be one of the reasons for its high incidence.

6.2. Advantages and challenges of TCMs in treatment of PIC

TCMs have obvious advantages in treating PIC, and they are effective in improving related symptoms and indicators of PIC. Although modern TCM physicians have not reached a consensus on the etiology, pathogenesis and syndrome distribution of PIC, the vast majority of physicians advocate determine treatment on the basis of pattern types, and generally agree that wind pathogen plays a central role in TCM treatment of PIC. It can cause disease alone or with other pathogens. TCMs with the efficacy of dispelling wind or expelling wind, ventilating lung and relieving cough are often used for treatment, and have achieved remarkable therapeutic effects. However, the pharmacological research on treating PIC with TCMs is relatively weak at present. For example, the effective components of prescription therapy for PIC are not known yet, which limits their use to a certain extent. At the same time, there is no unified standard for the diagnosis and treatment of PIC in TCMs, which is also a challenge that cannot be ignored. In the future, we can further explore the material basis and mechanisms of TCMs in treating PIC, so as to better guide the clinical treatment and experimental research of PIC.

TCMs, guided by holistic concept and syndrome differentiation, have certain advantages in treating PIC, with definite curative effect, few side effects and adverse reactions, which can improve PIC patients symptoms and quality of life and reduce their pain. It is believed that with the in-depth study of the material basis and mechanism of pharmacodynamics, TCMs will play a greater role in the treatment of PIC, showing the unique advantages of TCMs.

Authors’ contributions

N.L., W.X. and D.Z. carried out and conceived the project. R.J. searched the literatures, collected the data, analyzed the data and drafted the primary version of manuscript. X.Q. and X.L. were responsible for the initial proofreading of the content. D.Z. and N.L. adjusted the main structure of the manuscript. G.C., D.Z. and N.L. revised the final draft. All authors read and approved the final manuscript. The decision to submit the manuscript for publication was made by all the authors.

Declaration of Competing 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.

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