

# Efficacy and mechanism of Fuyang Yiyin method in pulmonary fibrosis based on the theory of “Yang transforming into Qi, Yin constituting form”

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**Abstract.** Idiopathic pulmonary fibrosis (IPF) is a common pathological manifestation of various pulmonary diseases, characterized by insidious onset and progression to irreversible organ failure. Currently, there are still inadequacies in the diagnosis and treatment of IPF. Traditional Chinese medicine (TCM) can intervene in IPF at multiple levels, targets, and pathways, possessing significant advantages in the treatment of IPF. The underlying mechanisms deserve further exploration. The theory of “Yang Transforming into Qi, Yin Constituting Form” in Huangdi Neijing embodies the specific meanings of yin and yang, containing profound views on life and disease. The pathological changes of IPF conform to the theory of yin and yang in “Yang Transforming into Qi, Yin Constituting Form”, where deficiency of yang transforming into qi and excessive formation of yin constitute the core pathogenesis of IPF. This paper proposes the principle of Fuyang Yiyin for IPF, aiming to nourish the source of fire and dispel yin turbidity, in order to broaden the clinical treatment strategies for IPF.

**Keywords:** Yang transforming into Qi, Yin constituting form, pulmonary fibrosis, Fuyang, Yiyin

## 1. Introduction

Idiopathic pulmonary fibrosis (IPF) is an idiopathic, slowly progressive, irreversible diffuse parenchymal lung disease characterized by the formation of lung fibrosis and irreversible organ failure [1]. Clinical symptoms include exertional dyspnea, reduced ventilatory and diffusing capacities, and radiographic findings of reticular and honeycomb patterns in the lungs. Prognosis is poor, with respiratory failure or right heart failure being the main causes of death in the advanced stages of IPF. The median survival period after IPF diagnosis is only 24 to 30 months, posing a serious threat to patient health [2-4]. IPF does not have a direct equivalent in traditional Chinese medicine (TCM). Its symptoms mainly manifest as cough, sputum production, dyspnea, and cyanosis. Based on TCM syndrome differentiation, it can be classified as “cough syndrome,” “lung distension syndrome,” “asthma syndrome,” “lung obstruction syndrome,” or “lung atrophy syndrome.” However, to distinguish it from most other lung diseases, most scholars tend to categorize it under “lung obstruction syndrome” or “lung atrophy syndrome” [5]. The pathogenesis of IPF is complex but fundamentally involves long-term deficiency of “Yang Transforming into Qi” in the organs, leading to the accumulation of tangible substances such as water, phlegm, dampness, and blood stasis [6]. Therefore, based on the TCM theory of “Yang Transforming into Qi, Yin Constituting Form”, this paper explores the pathogenesis of IPF from the perspective of deficiency of “Yang Transforming into Qi” and excess of “Yin Constituting Form” proposing that the Fuyang Yiyin method is a clinical approach for preventing and treating the occurrence and development of IPF.

## 2. The theoretical implications of “Yang transforming into Qi, Yin constituting form”

In the “Yin Yang Bie Lun” of the Yellow Emperor’s Inner Canon, it is stated, “Stillness represents Yin, while movement represents Yang.” The “Yin Yang Ying Xiang Da Lun” in the Yellow Emperor’s Inner Canon puts forward the theory of “Yang transformation into Qi, Yin Constituting Form.” In the Ming Dynasty, the renowned physician Zhang Jingyue further expounded on this theory in

the “Leijing,” stating, “Yang is active and disperses, thus transforming Qi; Yin is calm and condenses, thus forming shapes.” He summarized the basic movement forms of Yin and Yang, with intangible Yang transforming Qi as energy, and tangible Yin forming shapes as essential. The “Yin Yang Ying Xiang Da Lun” in the Yellow Emperor’s Inner Canon further elaborates, “Yin is calm and Yang is dry; Yang gives birth and Yin nurtures; Yang kills and Yin conceals; Yang transforms Qi, and Yin forms shapes.” Zhang Jingyue later annotated “Yang Transforming into Qi, Yin Constituting Form” as “Yang is active and disperses, thus transforming Qi; Yin is calm and condenses, thus forming shapes.” Subsequently, many scholars interpreted Yang as active and dispersing, primarily transforming Qi, while Yin is calm and condenses, primarily forming shapes [7]. “Transforming into Qi” refers to the transformation of substance into Qi, representing intangible matter, while “Constituting Form” refers to the materialization of substance, representing tangible matter. Yang, being active and dispersing, primarily governs the transformation of substance into Qi, while Yin, being calm and condensing, primarily governs the formation of substance into shapes [8]. Hence, Yang governs the Qi transformation of all things, while Yin governs the formation of all things, illustrating the interdependence and mutual utilization of Yin and Yang.

### 3. Pulmonary fibrosis from the perspective of “Yang transforming into Qi, Yin constituting form”

The formation of idiopathic pulmonary fibrosis (IPF) is not a sudden occurrence but rather a chronic, long-term pathological process. The essence of IPF lies in the dynamic balance of yin and yang, and the functions of “transforming into Qi” and “constituting form.”

#### 3.1. Insufficient “Yang transforming into Qi” as the premise of IPF

The Chapter “Sheng Qi Tong Tian Lun” of “Yellow Emperor’s Inner Classic” states: “Yang Qi is like the heavens and the sun. If it loses its place, it will shorten life without brilliance. Therefore, the movement of the heavens should be with the brightness of the sun...” When Yang Qi is vigorous, it is like the sun shining in the sky, boundless and without obstruction, promoting the transformation of Qi. The body is nurtured by it and remains free from disease and worry. When Yang Qi is deficient, lacking in transformation of Qi, and Yin clouds spread everywhere, then illnesses begin to arise. This is what is stated in “Yi Fa Yuan Tong”: “When Yang Qi circulates freely and Yin Qi does not stagnate, naturally illnesses do not arise. When Yang Qi is insufficient and there is a slight blockage, illnesses arise in abundance.” Severe deficiency of Yang Qi in the human body provides favorable conditions for the fibrosis of the lungs. The renowned Chinese traditional medicine expert Zhu Weijiu also proposed that “Yang is the foundation of life”, “Those who obtain Yang live, those who lose Yang die.” Yang Qi’s function and tendency are ascending and dispersing; it enhances the outward and upward force of transformation of Qi [9]. When Yang Qi is abundant, it vigorously nourishes the viscera, tissues, promotes the smooth circulation of Qi, blood, and body fluids, thereby preventing the occurrence of illnesses. The “Jingyue Complete Works” states: “Accumulation is caused by the cold Qi inside.” Yang Qi is like an engine, with Yang-transformed Qi as the source of heat. When the function of Yang-transformed Qi weakens and the power supply is insufficient, the metabolism of essence, blood, and body fluids becomes abnormal, leading to poor blood circulation, accumulation of dampness into water, accumulation of water into phlegm, and gradually, fibrosis occurs. In a survey of the constitution of patients with pulmonary fibrosis [10], biased constitutions accounted for the majority, with slight differences in the proportions of each constitution. Among them, Qi deficiency constitution, Yang deficiency constitution, and Qi stagnation constitution are more common.

In the traditional Chinese medicine system, the balance of yin and yang in the human body ensures that each performs its respective functions. The mutual balance between the functions of “transforming into Qi” and “constituting form” of yin and yang maintains the normal distribution and excretion of Qi, blood, body fluids, and promotes the smooth circulation of yin essence. This prevents the accumulation of phlegm, dampness, blood stasis, and other pathogenic factors, making it less likely for lung pathology to occur. However, if a person’s body has deficient Yang Qi in normal times, or suffers from chronic illness or severe diseases, damaging the organs and tissues, it can disrupt the harmony of yin and yang in the body. This disruption may lead to abnormal function of the warming capacity of Yang Transformation into Qi and excessive ability of “Yin constituting form,” resulting in the accumulation of water and dampness, condensation of body fluids into phlegm, and stagnation of blood, leading to phlegm and blood stasis obstructing the meridians and collaterals, weakening the lung lobes. The Jin Gui Yao Lue: Fei Wei Fei Yong Ke Sou Shang Qi Bing Mai Zhi states, “For lung atrophy where the person spits saliva without coughing, without thirst, there will be urine retention and frequent urination... This is due to cold in the lungs, often dizziness, more saliva, use Licorice and Dried Ginger Decoction to warm it.” Gao Xueshan in the Gao Zhu Jin Gui Yao Lue interprets this: “The lungs are the source of water, and their Qi resembles the sky, sometimes bridging between the heavens and the underworld, conveying the wonders of turbidity. When the lungs are deficient and unable to bridge, hence urine retention, the lungs are cold and unable to convey, hence frequent urination... Lung deficiency and coldness result in the lungs losing the virtue of Yang health.” In the Chong Ding Tong Su Shang Han Lun, it is stated that lung Qi deficiency leads to abnormal distribution of water and body fluids, “inability to regulate the waterways, causing water overflow outside the membrane, resulting in swelling.” These descriptions all contribute to the elucidation and application of the theory of “Yang Transforming into Qi, Yin Constituting Form.”

The Jin Gui Yao Lv Xin Dian points out that the lungs are a delicate organ; when they are cold, the Qi is weakened, revealing that deficiency of Yin and cold Yang can also lead to wilting. When kidney Yang deficiency declines, the warming function diminishes, unable to warm and nourish the lungs, resulting in lung deficiency and coldness, leading to lung wilting. Renowned

Chinese medicine master Hong Guangxiang [11] proposed the treatment concept of “treating the lungs without distant warmth,” and pointed out that external wind-cold is a common trigger for recurrent lung diseases, with weak Yang Qi being the main internal cause of pulmonary interstitial fibrosis. Professor Yang Yuping [12], based on years of clinical experience, summarized that the main pathogenesis of pulmonary interstitial fibrosis is Yang deficiency. Yang deficiency symptoms often appear during the occurrence and development of this disease, with phlegm and blood stasis being secondary factors. Deficiency pathogens can lead to excess pathogens, and Yang deficiency can cause or exacerbate blood stasis and phlegm production. Professor Zhao Jinxi [13] believes that the basis of pulmonary interstitial fibrosis is chronic lung Yang deficiency, with phlegm and blood stasis obstructing the lung collaterals being an important link in its pathogenesis. Individuals with deficient Taiyang and Weiyang constitutions are more prone to this disease. Professor Liu Liangyi [14] considers that lung atrophy caused by Yang deficiency and lung coldness is more common in clinical practice. Yang deficiency is the root cause, with phlegm and blood stasis being the manifestations. Yang deficiency is the internal cause of pulmonary interstitial fibrosis, while phlegm and blood stasis are secondary causes. Zhang Fulin [15] believes that prolonged internal injury or coughing can lead to decline in lung Yang, weakening physiological functions such as Qi control, warming, and water passage regulation. Accumulation of body fluids leads to phlegm and water retention, blood coagulation leads to blood stasis, and the stagnation of phlegm and blood exacerbates lung Yang deficiency, further worsening the condition. Combining years of clinical experience, Professor Zhang Wei [16] proposes that the abnormality of “Yang Transforming into Qi, Yin Constituting Form” is one of the pathogenic mechanisms of pulmonary interstitial fibrosis and a manifestation mechanism of the disease progression. The pathogenesis of pulmonary interstitial fibrosis is insufficient “Yang transformation into Qi,” and the production of phlegm, water retention, blood stasis, and toxin stagnation are manifestations of excessive “Yin Constituting Form.” In the later stages of IPF, symptoms include bilateral lung contraction, shrinkage, hardening of texture, and pathological changes resembling honeycomb or reticular interstitial fibrosis, akin to the withering of plants.

### 3.2. Excessive “Yin constituting form” as the pathological basis of IPF

In the context of insufficient “Yang Transformation into Qi,” the aggregation of tangible pathogenic factors such as phlegm and blood stasis congeals the lung collaterals, leading to a loss of lung suppleness. Similarly, the deposition of collagen and extracellular matrix also serves as an important material basis for the pathogenesis of IPF. The “Nan Jing: Wu Shi Wu Nan” states, accumulation is Yin Qi. In the human body, Yin Qi collectively refers to subtle substances such as essence, blood, and body fluids, as well as tangible bodies. The Complete Works of Jingyue explains, “Yang is active and disperses, thus transforming Qi; Yin is calm and condenses, thus forming shapes.” Yin primarily remains static and condenses, promoting the coagulation of all things into forms. “Yin Constituting Form” elucidates the coagulation movement of Qi. In a physiological state, the mingling of parental essences generates the origin of life, marking the beginning of Yin Constituting Form. During growth and development, abundant Yin Qi enriches Qi and blood, fills the body, and strengthens bones. However, in a pathological state, excessive “Yin Constituting Form” indicates excessive condensation of Yin Qi, leading to the accumulation of tangible pathological products such as phlegm, dampness, and blood stasis in the body, which is crucial for the formation of pulmonary fibrosis.

The “Xing Ming Gui Zhi” states, “Indeed, from head to toe, all tangible aspects of the human body are nothing but residues of Yin evils.” Pathological products such as phlegm and blood stasis can be attributed to the category of “Yin Constituting Form.” Yin has a calming and moistening effect. When Yin receives assistance from Yang, it becomes dynamic, and when Yin undergoes Yang transformation, it does not induce coldness. As the disease progresses, inflammation persists, and fibrous interstitium continues to deposit, Yin blood loses its warmth, accumulates in the lung collaterals, and when liver collaterals become congested and obstructed, Yang Qi cannot disperse, accelerating the progression of IPF. Yuan Chengbo and others [17] believe that lung coldness is the key pathogenesis of pulmonary interstitial fibrosis, with lung collateral obstruction being its main pathological feature. Water retention represents Yin evils, and the formation of cold-water and blood stasis is influenced by insufficient Yang Qi, jointly creating the pathological state of pulmonary interstitial fibrosis.

## 4. Modern medical perspective on “Yang transforming into Qi, Yin constituting form”

The metabolic process summarized by “Yang Transforming into Qi, Yin Constituting Form” permeates through the entirety of an organism’s life. In traditional Chinese medicine, “Qi” is regarded as the most fundamental substance constituting the human body, participating in the regulation of various life metabolic activities. As stated in the “Yi Men Fa Lu: Xian Zhe Ge Yan”, “Human reliance lies solely on this Qi.” In Western medicine, adenosine triphosphate (ATP) produced by mitochondria serves as the universal energy currency in metabolic processes, providing the majority of energy required for human life activities such as muscle contraction and protein synthesis [18]. Therefore, some scholars [19] propose that ATP and “Qi” are likely different expressions of the same substance in traditional Chinese medicine and Western medicine. In the pathogenesis of IPF, mitochondrial dysfunction mainly involves imbalance in mitochondrial reactive oxygen species (ROS) levels, changes in mitochondrial DNA, reduced mitochondrial-mediated autophagy, and imbalance in the electron transport chain. Dysfunctional apoptosis and senescence of IPF tissue cells mediated by mitochondria are considered significant indicators of fibrosis susceptibility during aging. Increased ROS generated by mitochondria can induce pulmonary fibrosis. ROS can activate transforming growth factor-beta (TGF-β), and TGF-β can, in turn, activate ROS, forming a vicious cycle [20].

The endoplasmic reticulum (ER) is an essential cellular organelle for completing substance metabolism. Its connection with “Yang Transformation into Qi” mainly manifests in material transport. The ER forms vesicles through budding and relies on the

fluidity of membrane structures to transfer large molecules such as proteins, which requires the propulsion of Yang Qi [21]. Insufficient “Yang Transformation into Qi” damages ER-related functions, leading to the accumulation of unfolded proteins and other “Yin essence,” triggering cellular stress response - the unfolded protein response. Subsequently, through the pathway of cell apoptosis, fibroblasts are activated into myofibroblasts under the action of cytokines such as transforming growth factor and epidermal growth factor, synthesizing collagen deposited in the extracellular matrix, ultimately leading to IPF [22].

The main components of the extracellular matrix are various fibrous proteins and polysaccharides. These components undergo continuous degradation and remodeling mediated by matrix-degrading enzymes in physiological and pathological states to maintain the coordination and balance between self-generation and degradation [23]. In the lungs of IPF patients, there is a dynamic imbalance between collagen synthesis and degradation, with increased collagen synthesis and reduced breakdown, possibly leading to excessive deposition of extracellular matrix in the pulmonary interstitium [24]. Combining the theory of Yin and Yang with modern medicine, the synthesis and degradation of the extracellular matrix can be understood as two aspects constrained by Yin-Yang opposition. At the cellular metabolism level, synthesis metabolism belongs to Yin, while breakdown metabolism belongs to Yang [25]. With Yang deficiency, Yin predominates, resulting in synthesis outweighing breakdown, leading to a massive deposition of extracellular matrix. It is evident that the disruption of material energy metabolism caused by mitochondrial dysfunction, ER dysfunction, extracellular matrix dysfunction, etc., forms an important pathological basis before the onset of IPF.

## 5. Clinical application of Fuyang and Yiyin method in treating IPF

The fundamental pathogenesis of IPF is the imbalance of Yin and Yang in the body, specifically manifested as insufficiency of Yang and excessive Yin, leading to the accumulation of waste and toxic substances in the body. Therefore, FuYang and Yiyin is the fundamental strategy for treating IPF.

### 5.1. Strengthening the source of Fire - Fuyang to assist Qi transformation

#### 5.1.1. Yang-Warming method

In “Sheng Qi Tong Tian Lun” of “Yellow Emperor’s Inner Classic”, it is stated: “The essence of Yin and Yang lies in the density of Yang.” In the relationship between Yin and Yang, Yang predominates over Yin, and the essence of Yin, such as essence, blood, and body fluids, can only flow unobstructed and have inexhaustible vitality when aided by ascending Yang. Therefore, in the treatment of IPF, it is necessary to focus on tonifying the body’s Yang Qi. As the saying goes, “Strengthen the source of fire to eliminate Yin’s obstruction.” By enhancing the function of “Yang Transformation into Qi,” the body’s Yang Qi is maintained in a relatively vigorous state, preventing the stagnation of Yin evils such as phlegm and blood stasis, thereby allowing Yin manifestations to dissipate. Zhang Zhongjing, a physician from the Han Dynasty, stated: “For those with phlegm and fluids, they should be warmed with warm medicines.”

Master of Traditional Chinese Medicine, Hong Guangxiang, proposed the academic viewpoint of “treating the lungs without venturing far from warmth.” [26] Lan Zhihui and others [27] inherited Professor Hong’s academic experience and clinical practice, and found that the basic characteristic of pulmonary interstitial fibrosis syndrome is the mixture of deficiency and excess, with primary Yang deficiency and secondary phlegm stagnation and blood stasis. They proposed a clear treatment method for this condition—comprehensive pulmonary warming. Based on the theory of comprehensive pulmonary warming, Professor Liu Liangyi [14] created the “Warming Lung and Dispersing Phlegm Decoction” with the efficacy of warming Yang, dispelling cold, transforming phlegm, and eliminating blood stasis to treat pulmonary interstitial fibrosis, achieving satisfactory therapeutic effects. Zhang Haiming and others [28] believed that the pathogenesis of pulmonary fibrosis lies in Yang deficiency leading to internal Yin cold, causing stagnation in the pulmonary meridians. The appropriate treatment is to use the method of warming Yang, dispelling cold, and unblocking meridians. Commonly used herbs include dried ginger, Asarum, Allium macrostemon, and cinnamon twigs, which can achieve satisfactory therapeutic effects. Yuan Chengbo and others [29] pointed out the direct causal relationship between the formation of cold-drink stasis and pulmonary Yang deficiency, thus using the rule of warming the lungs and transforming drinks to treat pulmonary interstitial fibrosis, commonly using the Xiao Qinglong Decoction with modifications to treat this condition. Li Kai and other scholars confirmed through the use of bleomycin to induce SSc mice models, followed by treatment with the Yang-warming and phlegm-transforming decoction or the HIF-1 $\alpha$  inhibitor KC7F2, observing the degree of pulmonary tissue fibrosis in mice. They confirmed that the Yang-warming and phlegm-transforming decoction could inhibit SSc pulmonary endothelial cell EndoMT and alleviate the degree of pulmonary tissue fibrosis in mice. Wang Yayun [30] conducted clinical observations on the treatment of idiopathic pulmonary fibrosis with the method of warming Yang and unblocking meridians to replenish blood and experimental studies on improving pulmonary fibrosis by regulating oxidative stress and iron death. It was demonstrated that the Yang-warming method can significantly alleviate the clinical symptoms of patients with idiopathic pulmonary fibrosis, improve the quantified grading of clinical symptoms after treatment, prolong the distance of the six-minute walk test, and slow down the progression of pulmonary function indicators. Its mechanism may involve reducing iron deposition and lipid peroxide accumulation in fibrotic lung tissue by inhibiting oxidative stress and iron death. Li Feiran [31] explored the mechanism of action of hepatocyte growth factor (HGF) in regulating the TGF- $\beta$ 1/Smads signaling pathway to intervene in EMT in pulmonary fibrosis rats using the method of replenishing Qi and warming Yang to unblock meridians. It was confirmed that the

Yang-warming method can upregulate HGF and inhibit the TGF- $\beta$ 1/Smads signaling pathway, improve the EMT process, and thereby delay pulmonary fibrosis. Zhang Qian conducted experimental studies on rats with pulmonary fibrosis by using astragalus combined with Epimedium to warm Yang and tonify Qi. It was confirmed that tonifying Qi and warming Yang herbs can to a certain extent alleviate pulmonary tissue inflammatory infiltration and collagen deposition, delay the progression of pulmonary fibrosis, and their mechanism may be related to inhibiting the NF- $\kappa$ B signaling pathway, thereby inhibiting the expression of inflammatory and pro-fibrotic factors and the EMT process, exerting anti-fibrotic effects.

### 5.1.2. Yang-Channeling method

The Yang-Channeling method aims to promote the circulation of Yang Qi in the body through methods such as resolving depression, transforming phlegm, and dispelling dampness. When Yang Qi is not deficient or the deficiency is not significant but there is stagnation of Yang Qi, the Yang-Channeling method is chosen to promote the circulation of Yang Qi. Both tangible and intangible pathogenic factors can easily obstruct the vital energy flow, causing stagnation of Yang Qi, thereby affecting the movement and transformation of Yang Qi. In such cases, the Yang-Channeling method is employed. The medications used in the Yang-Channeling method are mostly pungent and mildly warm in nature. Ye Tianshi believed that when “the chamber of Yang Qi is blocked, turbid Yin accumulates and obstructs,” “Yang Qi should be promoted,” and “pungent heat should be used for Yang promotion.” If Yang Qi stagnation is caused by Qi stagnation, it should be regulated to resolve the stagnation. If it is caused by dampness, dampness should be dispelled to promote circulation. If it is caused by liver depression, the liver should be soothed to promote circulation. If it is caused by phlegm stagnation, phlegm should be transformed to promote circulation. If it is caused by deficiency of Qi and blood, tonification should be applied to promote circulation. If it is caused by cold coagulation, pungent warmth should be applied to promote circulation. Professor Zhang Wei [32] believed that the basic pathological characteristics of pulmonary obstruction are stasis, phlegm, and toxic evils obstructing Yang Qi, and formulated the “Daluopulmonary Fairy Decoction,” mainly composed of ephedra, apricot kernel, platycodon grandiflorus, fritillaria bulb, zhejiang fritillaria, skullcap, and ligusticum wallichii, which has the effects of transforming phlegm, relieving asthma, promoting lung function, and activating blood circulation. Li Manyi and others [33] treated this condition based on the principle of “promoting lung meridians” and supplemented with blood-activating and stasis-resolving, heat-clearing and phlegm-transforming, Qi-nourishing and Yin-tonifying, lung-tonifying and kidney-nourishing principles. Professor Shi Suofang [34] believed that pulmonary obstruction is caused by pathological factors such as phlegm dampness, phlegm turbidity, phlegm heat, and damp heat, leading to pulmonary Qi stagnation and obstruction. He advocated treating it with the principles of opening the lungs to expel turbidity and promoting circulation by channeling Yang. Basic formulae such as Gualou, Xiebai, Banxia Tang and Fuling Gancao Tang are commonly used. “A good doctor does not treat phlegm but treats Qi. When Qi flows smoothly, all bodily fluids will follow suit.” Yang Qi stagnation and obstruction is the fundamental pathogenesis of IPF, which can be resolved by means of lung promotion, meridian circulation, Qi descent, phlegm transformation, lung opening, and Yang channeling to regulate lung Qi and overall bodily Qi, thereby resolving phlegm and stasis.

### 5.2. Dispelling Yin turbidity — Yiyin to expel pathogenic factors

The deficiency of Lung Yang leads to inadequate “Yang Transformation into Qi,” resulting in the formation of pathological substances such as phlegm and blood stasis. These pathological substances not only obstruct the lung meridians, leading to the deprivation of nourishment to lung lobes and the onset of IPF, but also invade the lungs. The struggle between Yin pathogenic factors and lung Yang further weakens the latter, leading to a vicious cycle where deficiency exacerbates deficiency and excess exacerbates excess. Therefore, in the treatment of IPF, it is necessary to address deficiency while simultaneously treating phlegm and blood stasis to prevent further injury to lung Yang. Traditional Chinese medicine holds that “those with phlegm and water retention should be treated with warming medicines” and “blood stasis is Yin pathogenic factors that cannot be dispelled without warmth.” Therefore, for conditions such as cold phlegm and blood stasis caused by Lung Yang deficiency, warming and resolving treatments should be employed to invigorate Yang Qi and promote dispersion. As stated in the “Huangdi Neijing: Zhi Zhen Yao Da Lun Pian” that which is bound should be dispersed. IPF manifests as tangible pathogenic factors, with Qi stagnation, phlegm turbidity, and blood stasis lurking in the lung meridians as its pathological basis. Therefore, in addition to the “Fuyang” foundation, attention should also be paid to the “Yiyin” method to dispel Yin turbidity. Zhang Renjia [35] summarized Professor Chen Wei’s experience in treating IPF, believing that the mutual obstruction of deficiency and blood stasis is a key link in the onset of IPF. Treatment should focus on invigorating Qi, promoting lung function, and activating blood circulation to dispel phlegm and resolve blood stasis. The combination of Qingjin Huatan Tang and Qingzao Jiufei Tang, with adjustments, has achieved good results in the treatment of IPF. Wang Zengxia [36] and others believe that in the early stages of IPF, the main manifestations are Qi deficiency and dampness, while in the middle and late stages, Qi stagnation, phlegm turbidity, and blood stasis are the main manifestations. Treatment should focus on invigorating Qi, activating blood circulation, resolving phlegm, and promoting meridian circulation, with an emphasis on the use of insect-based medicines. Yu Ruizhi and other scholars [37] believe that ensuring the smoothness of the meridians prevents blood stasis and phlegm production. Therefore, the key principle in treating lung meridian diseases is to ensure the smooth flow of the lung meridians. Scholars such as Wang Guoliang have demonstrated through research on the efficacy and mechanism of Daluo Pulmonary Fairy Decoction in the treatment of idiopathic pulmonary fibrosis that the suppression of Yin can effectively treat idiopathic pulmonary fibrosis. It can improve the levels of inflammatory mediators in patients, alleviate the body’s inflammatory response, inhibit the formation of microvessels and pulmonary fibrosis, improve lung function and clinical

symptoms, and enhance activity levels and quality of life.

## 6. Conclusion

The essence of IPF lies in Yang deficiency, with insufficient “Yang Transformation into Qi,” resulting in excessive “Yin Constituting Form,” where pathological substances accumulate in the lungs, causing the loss of lung shape and function and the onset of the disease. The deficiency of “Yang Transformation into Qi” is the fundamental internal cause, while the excessive “Yin Constituting Form” is the pathological manifestation. Insufficient function of “Yang Transformation into Qi” leads to abnormalities in the distribution and excretion of bodily Yin essence, resulting in the accumulation of water and phlegm turbidity, as well as blood stasis obstruction, leading to illness and disease onset. Water retention, phlegm turbidity, and blood stasis are all Yin pathogenic factors that cannot be dispersed without warmth. Therefore, in treatment, establishing the principle of “Fuyang and Yiyin” as the basic treatment principle for pulmonary interstitial fibrosis is essential.

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## References

- [1] LEÓN-ROMÁN, F., Valenzuela, C., & Molina-Molina, M. (2022). Idiopathic pulmonary fibrosis. *Medicina Clinica*, 159(4), 189-194.
- [2] Amaral, A. F., Colares, P. D. B., & Kairalla, R. A. (2023). Idiopathic pulmonary fibrosis: Current diagnosis and treatment. *Jornal Brasileiro De Pneumologia*, 49(4).
- [3] Bleinc, A., Blin, T., Legue, S., et al. (2023). Real-life survival of idiopathic pulmonary fibrosis with anti-fibrotic medication. *Revue Des Maladies Respiratoires*, 40(5), 371-381.
- [4] Mackintosh, J. A., Keir, G., Troy, L. K., et al. (2024). Treatment of idiopathic pulmonary fibrosis and progressive pulmonary fibrosis: A position statement from the Thoracic Society of Australia and New Zealand 2023 revision. *Respirology*, 29(2), 105-135.
- [5] Wang, G., Yang, J., & Wang, Z. (2018). Research progress of traditional Chinese medicine treatment for idiopathic interstitial pneumonia. *Xin Zhong Yi*, 50(05), 215-218.
- [6] Li, X., Chang, H., Shi, S. L., et al. (2021). Research progress on the pathogenesis and traditional Chinese medicine treatment of pulmonary fibrosis. *Zhong Yao Yao Li Yu Lin Chuang*, 37(01), 240-247.
- [7] Xu, B. W., Li, J., Gao, R. K., et al. (2020). Discussion on the diagnosis and treatment of tumors based on the theory of “Yang Transformation into Qi, Yin Constituting Form”. *Zhong Yi Za Zhi*, 61(04), 315-318.
- [8] Zhang, X. Y., Rao, Y. D., Guo, C. X., et al. (2020). Discussion on the meaning of “Yang Transformation into Qi, Yin Constituting Form” in Neijing. *Liaoning Zhong Yi Za Zhi*, 47(04), 80-82.
- [9] Kong, J. Y., & Zhu, H. Y. (2021). Discussion on the application of peony “tonifying Qi” effect in prescriptions based on the concept of “Yin Qi”. *Zhong Guo Min Zu Min Jian Yi Yao*, 30(20), 1-4.
- [10] Guo, S. J., Feng, J. H., Song, Y. L., et al. (2018). Preliminary study on the evolution law of TCM syndrome elements in different stages of idiopathic pulmonary fibrosis. *Shi Jie Zhong Xi Yi Jie He Za Zhi*, 13(06), 809-812+65.
- [11] Yu, J. W., Xue, H. R., Zhang, Y. B., et al. (2015). Collection of academic thoughts on diagnosis and treatment of pulmonary diseases by national master of traditional Chinese medicine Hong Guangxiang. *Zhong Hua Zhong Yi Yao Za Zhi*, 30(11), 3824-3829.
- [12] Yang, Y., & Yang, Y. P. (2021). One case of idiopathic pulmonary fibrosis treated by Yang Yuping. *Hu Nan Zhong Yi Za Zhi*, 37(11), 92-93.
- [13] Zhang, Y. F., & Zhao, J. X. (2020). Discussion on the diagnosis and treatment of pulmonary interstitial fibrosis from the perspective of Zhao Jinxi’s syndrome differentiation and treatment. *Zhong Yi Xue Bao*, 35(09), 1934-1938.
- [14] Lan, Z. H., Zhang, Y. B., Li, S. F., et al. (2014). Experience of Professor Liu Liangdi in treating pulmonary interstitial fibrosis with WENLUOHUAXIAN Formula. *Zhong Hua Zhong Yi Yao Za Zhi*, 29(10), 3141-3143.
- [15] Zhang, F. L., & Tao, H. H. (2011). Discussion on the diagnosis and treatment rules of lung yang deficiency syndrome from Jin Gui Yao Lue. *Shan Dong Zhong Yi Yao Da Xue Xue Bao*, 35(06), 500-501.
- [16] Zhang, Q., & Zhang, W. (2023). Discussion on the theory of “Yang Transformation into Qi and Yin Constituting Form” in the treatment of idiopathic pulmonary fibrosis in traditional Chinese medicine. *Guang Ming Zhong Yi*, 38(09), 1653-1655.
- [17] Yuan, C. B., Wang, T., & Shi, L. (2014). Modified Xiao Qing Long Decoction in the treatment of pulmonary interstitial fibrosis. *Journal of Changchun University of Traditional Chinese Medicine*, 30(04), 640-641+4.
- [18] He, S. F., Wang, X. H., Chen, X. R., et al. (2023). Relationship between mitochondrial dysfunction and pelvic organ prolapse based on the “spleen-mitochondria correlation” theory. *Zhong Guo Min Zu Min Jian Yi Yao*, 32(17), 13-17.
- [19] Zheng, M. L. (2004). Substantive cell biology hypothesis of Tibetan medicine. *Zhong Yi Yao Xue Kan*, (06), 1068-1070.
- [20] Rangarajan, S., Bernard, K., & Thannickal, V. J. (2017). Mitochondrial dysfunction in pulmonary fibrosis. *Annals of the American Thoracic Society*, 14, S383-S388.
- [21] Lu, Z. K., & Huang, Y. Q. (2022). Scientific connotation of “Yang Transformation into Qi and Yin Constituting Form” based on endoplasmic reticulum function. *Zhong Hua Zhong Yi Yao Xue Kan*, 40(09), 149-151.
- [22] Raghu, G. (2019). Idiopathic pulmonary fibrosis: Shifting the concept to irreversible pulmonary fibrosis of many entities. *Lancet Respiratory Medicine*, 7(11), 926-929.

- [23] Theocharis, A. D., Skandalis, S. S., Gialeli, C., et al. (2016). Extracellular matrix structure. *Advanced Drug Delivery Reviews*, 97, 4-27.
- [24] Ye, W., Sun, M. Y., & Wang, X. H. (2020). Research progress on the relationship between idiopathic pulmonary fibrosis and the cellular microenvironment. *Journal of Chinese Academy of Medical Sciences*, 42(03), 410-416.
- [25] Xiao, F. (2019). The philosophical bridge between traditional Chinese medicine and modern medicine. *Zhong Guo Zhong Yi Yao Xian Dai Yuan Cheng Jiao Yu*, 17(14), 22-28.
- [26] Zhao, F. D., & Cai, C. L. (1993). Application of Hong Guangxiang's "treatment of lungs without being far away" in chronic cough and asthma. *Jiangxi Zhong Yi Yao*, (02), 3-4.
- [27] Lan, Z. H., Zhang, Y. B., Zhu, W., et al. (2012). Clinical experience of treating pulmonary interstitial fibrosis with the whole-process warming method. *Zhong Yi Yao Tong Bao*, 11(05), 38-40.
- [28] Zhang, H. M., Ding, H., & Chen, R. (2015). Experience in treating pulmonary fibrosis with warming yang, dispelling cold, and promoting meridian circulation method. *Zhong Guo Zhong Yi Yao Xin Xi Za Zhi*, 22(04), 100-101.
- [29] Li, K., Wang, Q., Duan, P. P., et al. (2023). Mechanism of warming yang and dissolving turbidity and promoting blood circulation formula in inhibiting systemic sclerosis EndoMT. *Journal of Nanyang Institute of Technology*, 15(06), 118-122+28.
- [30] Wang, Y. Y. (2023). Clinical observation of warming yang and promoting blood circulation method in treating idiopathic pulmonary fibrosis and experimental study on improving pulmonary fibrosis by regulating oxidative stress and iron death [Doctoral dissertation, Shandong University of Traditional Chinese Medicine].
- [31] Li, F. R. (2023). Mechanism of hepatocyte growth factor (HGF) regulating TGF- $\beta$ 1/Smads signaling pathway intervention in epithelial-mesenchymal transition (EMT) of pulmonary fibrosis rats based on replenishing Qi, warming Yang, and promoting meridian circulation method [Doctoral dissertation, Shandong University of Traditional Chinese Medicine].
- [32] Su, J., & Zhang, W. (2021). Discussion on the pathogenesis and treatment of idiopathic pulmonary fibrosis based on the theory of lung collaterals obstruction and accumulation and dispersion. *Zhong Yi Za Zhi*, 62(11), 947-950+70.
- [33] Li, M. Y., Liu, H. Y., Chen, C. B., et al. (2021). Diagnosis and treatment of pulmonary obstruction. *Rheumatism and Arthritis*, 10(01), 54-57.
- [34] Cheng, Y. N., & Shi, S. F. (2012). Professor Shi Suofang's experience in treating pulmonary obstruction with open draining and dispersing obstruction method. *Journal of Jilin Traditional Chinese Medicine*, 32(05), 450-451.
- [35] Zhang, R. J., & Chen, W. (2019). Experience of Director Chen Wei in diagnosing and treating idiopathic pulmonary fibrosis from the perspectives of deficiency, phlegm, and blood stasis. *Journal of Shaanxi University of Chinese Medicine*, 42(06), 60-62+74.
- [36] Wang, Z. X., & Zhang, W. (2017). Discussion on the treatment of idiopathic pulmonary fibrosis based on the theory of "lung Qi and Yin deficiency, phlegm and stasis lurking in collaterals". *Journal of Changchun University of Traditional Chinese Medicine*, 33(03), 386-389.
- [37] Yu, R. Z., Pang, L. J., Wang, T. J., et al. (2022). Diagnosis and treatment of idiopathic pulmonary fibrosis based on deficiency, toxin, phlegm, and blood stasis. *Zhong Hua Zhong Yi Yao Za Zhi*, 37(10), 5815-5818.