The provided document lists several herbal interventions and specific plant extracts studied for their efficacy in treating smoking-related pulmonary issues, particularly **cigarette smoke (CS)-induced chronic bronchitis and emphysema**.

Based on the experimental outcomes and clinical evidence detailed in the file, here is the ranking of these herbs:

## 1. Platycodon grandiflorum (Balloon Flower / PG)

This herb is described as a "promising medicinal and food homologous plant" specifically for **cigarette smoke-induced chronic bronchitis**[1].

- **Efficacy:** Experimental validation showed that a 70% ethanol elution fraction significantly alleviated pathological lung tissue damage, oxidative stress, and inflammation in rat models[2].
- **Active Compounds:** It contains eight potential bioactive compounds (including **Platycodin D** and **Polygalacin D**) that mitigate disease progression by inhibiting the **TLR4/MyD88/NF-κB** signaling pathway[3].

## 2. Senecio cannabifolius Less. (Component of Feining Keli)

**Feining Keli (FNKL)** is an herbal preparation primarily made from this plant[44].

- **Efficacy:** Studies report "excellent therapeutic effects" on chronic bronchitis, specifically improving lung index and reducing pathological tissue damage in models combined with smoking[5555].
- **Mechanism:** It reduces inflammatory responses and oxidative stress, with **quercetin-3-galactoside** identified as its key active component[6666].

## 3. Lilium lancifolium Thunb. (Tiger Lily / Root Extract)

This extract is identified as a strong therapeutic candidate for **pulmonary inflammation and emphysema** caused by cigarette smoke[7777].

- **Efficacy:** In CS-exposed mouse models, it significantly inhibited the infiltration of inflammatory cells (macrophages and neutrophils) and reduced the enlargement of pulmonary airspaces (alveoli)[888888888].

- **Mechanism:** It works by reducing the secretion and expression of key inflammatory factors like TNF-α and IL-6[9999].

## 4. Scutellaria baicalensis Georgi (Baikal Skullcap)

- **Efficacy:** A systematic review highlighted this herb as one that affects multiple factors to improve **lung emphysema**[10]. It is grouped with high-efficacy phytochemicals like gallic acid and quercetin[11].

## 5. Forsythia suspensa (Vahl) (FF)

- **Efficacy:** Research suggests FF can relieve **CS-induced pulmonary inflammation**[12121212].

- **Mechanism:** It operates through a multi-mechanism approach, including regulating intestinal flora and using **caffeoyl quinic acids** to alleviate lung inflammation[1313131313131313].

## 6. Monascus adlay

- **Efficacy:** This natural product is noted for effectively improving pulmonary emphysema due to its combined antioxidant, anti-inflammatory, and anti-apoptotic properties[14].

## 7. Caryocar coriaceum (Pequi Tree)

- **Efficacy:** The fixed oil from this tree is used in popular medicine as an anti-inflammatory agent specifically for **bronchitis** and other bronchopulmonary infections[15151515].

## 8. Suxiao Jiuxin Pill (SXD)

- **Efficacy:** Studied for its therapeutic mechanism in treating **acute bronchitis**[16].

- **Mechanism:** It regulates the PI3K/Akt/NF-κB signaling pathway to reduce oxidative stress and inhibit cell death[1717171717171717].

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In addition to the refined status of Baikal Skullcap, the provided file highlights several significant and recent advancements in the herbal treatment of smoking-related pulmonary diseases.

## 1. Breakthrough on Qingke Pingchuan (QKPC) Granules

Newly updated research from **January 2025** details the efficacy of QKPC granules in treating **COPD exacerbations (ECOPD)** caused by cigarette smoke[1].

- **Mechanism:** It inhibits the formation of **neutrophil extracellular traps (NETs)** via the **NOX2/p47phox-ROS pathway**[2].
- **Key Components:** The study identifies **epigallocatechin-3-gallate (EGCG)** and **quercetin** as the primary bioactive compounds responsible for reducing airway inflammation and goblet cell metaplasia[3].

## 2. Comprehensive Analysis of Platycodon grandiflorum (Balloon Flower)

A detailed study scheduled for **September 2025** confirms why this is considered the #1 treatment for smoke-induced chronic bronchitis[4].

- **Bioactive Profiling:** Researchers identified **104 chemical compounds**, specifically highlighting **8 key active components** (including Platycodin D3, Platycoside E, and Polygalacin D)[5].
- **Pathway Validation:** The efficacy is tied to the downregulation of the **TLR4/MyD88/NF-κB** signaling pathway, providing a modern molecular explanation for its traditional use[6].

## 3. Insights into Dietary Flavonoids

New large-scale cross-sectional data from **2024** explores the correlation between general dietary flavonoid intake and smoking-related issues[7].

- **Specific Benefits:** Higher flavonoid intake is associated with a significantly **lower risk of chronic bronchitis and asthma**, particularly in men[8].
- **Top Contributors:** The flavonoid **Glycitein** was found to have a 26.2% health contribution for improving emphysema, while **Eriodictyol** contributed 32.13% toward

alleviating asthma symptoms[9].

## 4. Multimechanism Action of Forsythia suspensa (FF)

Fresh data from **2025** reveals that FF doesn't just treat the lungs directly; it works through a "multimechanism" approach[10].

- **Gut-Lung Axis:** It relieves smoke-induced inflammation by **regulating intestinal flora disorders**[11].
- **Lung Tissue Action:** It utilizes **caffeoyl quinic acids** to regulate lysophosphatidylcholine biosynthesis within the lung tissue itself[12121212].

## 5. Refined Mechanism of Feining Keli (FNKL)

Recent studies from **December 2024** have integrated untargeted metabolomics to reveal the "material basis" of this herb[13131313].

- **Active Ingredient: Quercetin-3-galactoside** has been pinpointed as the key component that stabilizes the HIF-1α pathway and reduces oxidative stress in smoking models[14].

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Second list

several herbs and herbal formulas that demonstrate **"excellent therapeutic effects," "promising"** results, or the ability to **"mitigate"** and **"attenuate"** the progression of cigarette smoke (CS)-induced chronic bronchitis (CB).

The following herbs are highlighted in the sources for their efficacy in treating this condition:

## 1. Platycodon grandiflorum (Balloon Flower)

- **Status:** Described as a **"promising"** medicinal plant for cigarette smoke-induced chronic bronchitis,.
- **Effect:** It was found to "significantly alleviate" pathological lung tissue damage, oxidative stress, and inflammation associated with smoking.
- **Action:** It works by inhibiting the TLR4/MyD88/NF-κB signaling pathway, which mitigates the progression of CB inflammation.

## 2. Senecio cannabifolius (Found in "Feining Keli")

- **Status:** This is the primary ingredient in the herbal preparation *Feining Keli*, which studies noted has **"excellent therapeutic effects"** on chronic bronchitis,.
- **Effect:** It improved lung index, reduced pathological damage, and decreased collagen fiber area (fibrosis) in rats with CB induced by smoking and infection.
- **Action:** It reduces inflammatory responses and oxidative stress by regulating the PI3K/AKT and NF-κB pathways.

## 3. Regan Saibisitan (RGS)

- **Status:** A Uyghur herbal formula described as a **"potential drug"** for treating chronic bronchitis disease.
- **Effect:** RGS treatment significantly improved the thickening of the bronchial epithelium and decreased collagen deposition and mucus secretion in mice exposed to cigarette smoke.
- **Action:** It alleviates airway inflammation by inhibiting the JAK2/STAT3 signaling pathway,.

## 4. Srolo Bzhtang (SBT)

- **Status:** A traditional Tibetan formula (containing *Solms-Laubachia eurycarpa*, *Bergenia purpurascens*, and *Glycyrrhiza uralensis*) used to treat lung "phlegm-heat" syndromes like chronic bronchitis.
- **Effect:** It exhibited **"protective effects"** against cigarette smoke-induced airway inflammation and mucus hypersecretion.
- **Action:** It downregulates the IL-13/STAT6 signaling pathway, reducing the production of MUC5AC (mucus).

## 5. Gleditsiae sinensis fructus & Jujubae fructus

- **Status:** A classical prescription used for the treatment of chronic bronchitis.
- **Effect:** The combination **"attenuates"** chronic bronchitis effectively by inhibiting inflammatory responses and improving pathological changes in lung and tracheal tissue.
- **Action:** It regulates the AGE-RAGE signaling pathway.

## 6. Houpo Mahuang Decoction (HPMHD)

- **Status:** A Traditional Chinese Medicine formula used for respiratory diseases.
- **Effect:** It **"ameliorated lung damages"** in mice with chronic bronchitis induced by smoking and lipopolysaccharide.

- **Action:** It decreases the inflammatory response by downregulating the NF-κB signaling pathway.

## 7. Farfarae Flos (Flower buds of *Tussilago farfara*)

- **Status:** Used for the treatment of cough and bronchitis.
- **Effect:** It **"mitigates"** cigarette smoking-induced lung inflammation.
- **Action:** It regulates lysophosphatidylcholine biosynthesis and tryptophan metabolism.

## 8. Fresh Phragmitis Rhizoma

- **Status:** Studied for its effect on airway inflammation.
- **Effect:** It alleviated pathological changes and fibrotic lesions in lung tissue in a rat model of smoking-induced chronic bronchitis.
- **Action:** It inhibits the TGF-β signaling pathway to prevent airway inflammation and promote cell repair.