

Integrating Proprietary Natural Formulations into COPD Treatment

Type: Review Article

Received: June 22, 2026

Published: August 04, 2026

Christina Rahm*

DRC VENTURES LLC, USA

***Corresponding Author:** Christina Rahm, DRC VENTURES LLC, USA.

Citation:

Christina Rahm. "Integrating Proprietary Natural Formulations into COPD Treatment". PriMera Scientific Surgical Research and Practice 8.2 (2026): 07-20.

Copyright:

© 2026 Christina Rahm. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Integrating Proprietary Natural Formulations into COPD Treatment

Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory disorder characterized by persistent airflow limitation and chronic respiratory symptoms, most commonly resulting from long-term exposure to harmful particles or gases. The two primary forms of COPD chronic bronchitis and emphysema are marked by airway inflammation, structural remodeling, and narrowing of the bronchial passages, leading to impaired gas exchange and reduced lung function. As the disease advances, the patient increasingly experiences symptoms such as shortness of breath, chronic cough, and sputum production. Over time, symptom progression may necessitate additional interventions, including bronchodilators, corticosteroids, and in more advanced stages, supplemental oxygen therapy. The need for oxygen support can significantly impact the patient's quality of life and daily functioning. COPD represents a major global public health burden due to its high prevalence, morbidity, and mortality. According to the World Health Organization, COPD was the third leading cause of death worldwide in 2019, accounting for approximately 3.23 million deaths. Beyond its clinical impact, COPD contributes to substantial economic strain through healthcare costs, hospitalizations, lost productivity, and long-term disability. Its chronic and progressive nature underscores the importance of early detection, preventative strategies, and comprehensive management approaches to reduce disease burden and improve patient outcomes.

Traditional management strategies of COPD focus on managing the symptoms of the disease, avoiding and reducing the severity of the flare-ups, and trying to enhance the functioning of the lungs and the life expectancy of the patient. The aim of managing COPD is to convince a patient that they should quit smoking, use drugs such as bronchodilators and corticosteroids, use pulmonary rehabilitation in case of the development of chronic respiratory failure, and use supplemental oxygen in the final stages of the disease (Ruvuna & Sood, 2020). Long-acting muscarinic antagonists (LAMAs) and long-acting beta-agonists (LABAs) cause relaxation of the bronchial muscle, and inhaled corticosteroids (ICS) prevent further inflammation of the bronchi. Pulmonary rehabilitation, therefore, consists of exercise training and knowledge/ skill, which equals exercise and psychological improvement (Halpin et al., 2020). However, the implemented conventional methods appear insufficient to control outcomes and treat COPD since a patient's activities remain stigmatic and produce frequent exacerbations.

In recent years, interest in natural and integrative approaches has grown alongside the rising global incidence of COPD. Complementary strategies including targeted use of botanicals, vitamins and minerals, as well as supportive therapies such as structured exercise and therapeutic bodywork have

been explored for their potential to help reduce inflammation, ease respiratory symptoms, and support overall pulmonary function (Vogelmeier et al., 2017; Soriano et al., 2020). Rather than replacing conventional pharmacologic treatment, these approaches are most often considered within a multimodal management framework that integrates standard medical care with evidence-informed supportive therapies. When appropriately implemented, such integrative strategies may offer additional benefits, including reduced frequency of exacerbations, modest improvements in lung function, and enhanced quality of life for the patient. Continued clinical research is essential to better define their role, optimize dosing strategies, and ensure safety within comprehensive COPD care plans.

This case study aims to identify whether the implementation of natural medicine alongside traditional medicine can be considered in the treatment of a patient with COPD. In the context of the current work, an attempt is made to describe the patient's medical history, clinical course, and outcome of the case after the comprehensive treatment with both conventional medicine and natural medicines. This will afford further understanding of the applicability and effectiveness of this integrated model. The case study will mainly concern the effects of the administration of natural preparations, which are exclusive and manufactured by the company, in addition to conventional COPD medications, on the patient's condition in terms of relief of symptoms, improvement of lung function, and quality of life.

Case Presentation

Patient Demographics and Medical History

The patient, a 64-year-old male, presented to our clinic with a history of chronic respiratory symptoms and a diagnosis of COPD. He had a smoking history of 1 pack per day for 15 years and stopped smoking 2 years ago. The patient claimed he felt high stress in his lifestyle during the interview. They had a family history; his dad died of lung cancer at the age of 72, and his mom had asthma. With regards to the patient's medical history there is hypertension, which was identified 3 years ago and the patient takes medication for it. He was also diagnosed with Chronic Obstructive Pulmonary Disease, COPD, 3 years ago and has received pharmacological and lifestyle management.

Presenting Symptoms and Clinical Findings

During the presentation, the patient pointed out that his persistent shortness of breath had actually become more severe in the last year. He stated that he has had a productive cough in the morning for one year. The patient also reported having repeated respiratory infections {6 per six months} for which he had to be placed on antibiotics and oral steroids. Further, he claimed to have reduced exercise tolerance, limiting his activities of daily living and reduced quality of life. Upon the initial assessment, the patient underwent a series of clinical tests to evaluate his respiratory function and overall health status. The arterial blood gas (ABG) analysis revealed a pH of 7.38 with moderate hypercapnia accentuated by a paCO_2 of 48 mmHg and mild hypoxemia with a paO_2 of 68 mmHg; room air SpO_2 of 94%. These results pointed toward a marginal reduction in the efficiency of gas exchange and ventilation. Spirometry testing was also done; the patient's percent predicted FEV_1 was 45% with moderate to severe obstruction, FEV_1/FVC ratio of 0.55 (obstructive pattern). A chest X-ray was also done, and the result showed hyperinflation of the lungs with flattened diaphragms, as expected of a COPD patient. Contrary to this, no focal consolidations were seen in the X-ray.

Diagnosis and Staging of COPD

The patient history, symptoms, and clinical examination findings were suggestive of moderate to severe chronic obstructive pulmonary disease. This patient's FEV_1 of 45 % predicted classified him at GOLD stage III, consistent with severe airflow limitation. The GOLD system of staging COPD is according to the post-bronchodilator FEV_1 with stage I being mild COPD ($\text{FEV}_1 \geq 80\%$ predicted), stage II moderate ($50\% \leq \text{FEV}_1 < 80\%$ predicted), stage III severe ($30\% \leq \text{FEV}_1 < 50\%$ predicted) and stage IV very severe ($\text{FEV}_1 < 30\%$ predicted or FEV_1 50% predicted with chronic respiratory failure).

Besides the GOLD staging, the presence of the main symptoms and the history of exacerbation were used to consider for further treatment process. His repeated episodes of respiratory infection and relapses of asthma, together with his continued symptoms and

provider visits, suggested the requirement for an asthma management plan that embraces pharmacologic treatment and nonpharmacologic measures.

Initial Treatment Plan and Response

The initial treatment plan for the patient focused on optimizing his pharmacological therapy and introducing lifestyle modifications to improve his respiratory symptoms and overall quality of life. The patient was given long-acting bronchodilators, a long-acting muscarinic antagonist (LAMA) inhaler of tiotropium to be taken once daily, a long-acting beta-agonist (LABA) plus inhaled corticosteroids of salmeterol/fluticasone to be taken twice daily. A short-acting beta-agonist inhaler (SABA), albuterol, was also prescribed as required for immediate relief of symptoms. Besides pharmacologic intervention, the patient was urged not to smoke, and information about the different ways to quit smoking was provided to the patient independently. He was again a part of pulmonary rehabilitation, during which he was introduced to exercise training and education procedures that create more exercise stamina. The patient was also counseled on the patient's diet for a change to recommend anti-inflammatory foods that are rich in nutrients for respiratory-related illnesses.

Despite the initial treatment plan, the patient continued to experience persistent symptoms and frequent exacerbations. He reported he felt better from the shortness of breath and cough, but in general, the changes he wanted were not achieved. The patient's exercise tolerance was still reduced, and they suffered two further respiratory infections in the first 3 months of treatment, which necessitated antibiotics and oral steroid courses. Due to the inadequate response to the initial treatment plan, the members of the health care team are now looking for other possible treatment strategies that are more effective in managing patients' COPD. This provoked the idea of incorporating natural medicine management techniques into his treatment plan to allow for a more complete and wholesome management plan. The possibility for the considered cases and for the discussed types of the problem of using natural remedies, including the possible formulas of the herbs and the nutrition supplements, and the ways for lessening the symptoms and inflammation, were explained to the patient. The strategy regarding using those natural remedies together with the conventional treatment was agreed upon.

Integrating Natural Medicine

Rationale for Incorporating Natural Remedies

The decision to incorporate natural medicine as an adjunctive treatment option for COPD was informed by emerging research suggesting that evidence-based integrative strategies may offer additional support in the management of chronic respiratory disease and the optimization of lung health (Li et al., 2020). Despite adherence to conservative management including pharmacologic therapy and recommended lifestyle modifications the patient continued to experience persistent symptoms and recurrent exacerbations. These suboptimal outcomes highlighted the need for a more comprehensive and integrated approach to care. As a result, an expanded management strategy was considered, aimed at addressing inflammation, oxidative stress, and overall respiratory resilience alongside standard medical treatment.

Natural remedies, such as herbal formulations and dietary supplements, have shown promise in alleviating respiratory symptoms, reducing inflammation, and supporting lung function in COPD patients. Most of these natural treatment systems are directed to many aspects of COPD development, which include antioxidant stress, inflammation, and structural changes in the respiratory tracts (Li et al., 2021). If these underlying mechanisms are addressed, natural remedies may benefit patients by preventing the advance of the disease and enhancing their quality of life.

The integration of natural medicine into the patient's evidence-based treatment plan was further supported by the recognition that COPD is a complex, chronic condition with multifactorial pathophysiology, often requiring a comprehensive and integrative approach to management. The healthcare team intended to use conventional treatment together with well-documented natural procedures to make the patient's management individualized, efficient, and holistic (Li et al., 2020). Associate care plans were expected to improve the general efficiency of the treatment regimen, which was capable of improving the control of existing symptoms, decreasing the

number of exacerbations, and improving lung function (Li et al., 2020). Also, treatments with natural products for COPD have been said to cause fewer side effects than conventional pharmacological therapies. This is particularly important given that COPD is a long-term condition that is best treated with long-term management requiring a regimen of drugs during which patients may be more vulnerable to these effects.

Proprietary Blends Used in the Case Study

In this case study, multiple proprietary blends were incorporated into the patient's regimen as adjuncts to conventional medical care. Each formulation was selected intentionally, based on its potential to address key components of COPD pathophysiology, including oxidative stress, chronic inflammation, impaired tissue repair, and immune dysregulation. Proprietary Blend I contains bioavailable silica, vitamin C, and trace minerals (Barnes, 2018). Silica was included for its proposed role in supporting connective tissue integrity and structural resilience within lung tissue. Vitamin C and essential trace minerals function as antioxidants, helping to mitigate oxidative stress and inflammatory burden within the airways both central drivers of COPD progression. This blend was initiated at a dose of 2 × 6 drops (morning and evening) for three days, then administered every three days with a gradual titration of one drop per dose until reaching 2 × 10 drops, allowing for careful tolerance monitoring and individualized adjustment. Proprietary Blend II includes N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed extract, pine bark extract, curcumin, and vitamin D3 (Lucas et al., 2022). This combination was selected for its potential to support respiratory endurance, modulate inflammation, and enhance immune regulation. Ingredients such as curcumin and pine bark extract provide antioxidant and anti-inflammatory activity, while vitamin D3 contributes to immune balance. The blend was prescribed at a dosage of one capsule each morning to support daytime respiratory function and systemic resilience.

Proprietary Blend III, which includes turmeric, resveratrol, black cumin seed oil, aloe vera, and apple cider vinegar, was also added to support the microbiome and pulmonary system. These bioactive compounds were selected for their documented antioxidant and anti-inflammatory properties, which may help modulate systemic inflammation and oxidative stress both central features in the pathophysiology of COPD. In addition, supporting gut integrity and microbial balance was considered important given the emerging evidence of the gut-lung axis, which suggests that microbiome health can influence immune regulation and respiratory outcomes. By targeting both pulmonary inflammation and gastrointestinal resilience, this blend was incorporated as part of a broader, systems-based strategy within the COPD protocol.

Proprietary Blend IV, consisting of vitamin C, vitamin D3, and zinc, was included to support immune function further and reduce the risk of respiratory infections, which are common in COPD patients (Lucas et al., 2022). The patient was advised to intake ½ teaspoon of this blend in the morning. Proprietary Blend V containing inulin, broccoli, kale, spinach, green cabbage, parsley, aloe vera, cayenne pepper, chlorella, spirulina, wheatgrass, barley grass, psyllium husk powder, alfalfa leaf, apple fiber, flaxseed, green banana flour, blueberry powder, pomegranate powder, MCT coconut oil powder is included to offer multiple nutrients and antioxidants needed to This blend was recommended to the patient as one teaspoon before sleep.

Finally, Proprietary Blend VI containing vitamin K2, vitamin D3, vitamin C, magnesium oxide, OmniMin AC trace minerals, quercetin, and NAD+ was incorporated to provide comprehensive systemic support (Safari et al., 2023). This formulation was selected to promote bone health, which is particularly relevant in COPD patients at risk for corticosteroid-related bone loss, while also addressing inflammation, oxidative stress, and cellular energy metabolism. Quercetin and vitamin C contribute antioxidant and anti-inflammatory activity, while NAD+ supports mitochondrial function and cellular resilience. The blend was prescribed at a dosage of one capsule each morning. Dosing and frequency for all proprietary blends were individualized based on the patient's clinical presentation, tolerance, and therapeutic response (Safari et al., 2023). Throughout the protocol, the healthcare team closely monitored progress to assess efficacy, track potential adverse effects, and make appropriate adjustments, ensuring that the treatment plan remained dynamic, patient-centered, and integrative in nature.

Additional Supportive Measures

The patient was also taught several lifestyle changes and additional supportive measures to be taken in regard to the respiratory well-being of the patient. Tobacco use cessation was a key step in managing the patient's case, as smoking is a key cause of COPD, which makes symptomatology worse. The patient had discontinued smoking two years prior to the onset of symptoms; however, the clinical team reinforced the critical importance of maintaining long-term smoking cessation as a cornerstone of COPD management (Tonga & Oliver, 2023). They helped the patient get information and assistance to conquer hunger and avoid a relapse.

Exercise and pulmonary rehabilitation were also part of the supportive care employed in regard to this patient. The healthcare team decided to work with the patient on exercising by admitting him to a COPD-supervised exercise training program. The program incorporated aerobic conditioning, resistance training, and targeted breathing exercises. The structured exercise prescription was designed to improve exercise tolerance, reduce dyspnea, and enhance overall physical function and endurance in the patient (Heefner et al., 2024). The patient was advised to have physical exercise sessions and to increase physical activity's frequency and duration progressively.

Nutritional support was a central component of the patient's comprehensive care plan. The healthcare team, including nurses and therapists, provided individualized dietary counseling to ensure that the patient's nutritional intake was adequate in total calories while also rich in anti-inflammatory and antioxidant-dense nutrients known to support respiratory health (Beijers et al., 2023). Given the increased metabolic demands often associated with chronic lung disease, maintaining appropriate nutritional status was emphasized as critical for preserving muscle mass, immune function, and overall energy levels. The patient was encouraged to increase consumption of fruits, vegetables, whole grains, lean proteins, and healthy fats particularly those containing omega-3 fatty acids while minimizing processed foods, refined sugars, and excessive sodium, which can contribute to systemic inflammation and fluid retention. Education also focused on maintaining a healthy body weight, as both obesity and undernutrition can negatively impact pulmonary mechanics, exercise tolerance, and overall COPD outcomes. By addressing nutrition proactively, the care team aimed to enhance respiratory resilience, reduce exacerbation risk, and improve overall quality of life.

Finally, the patient was educated on structured breathing techniques and dyspnea management strategies as part of a broader pulmonary rehabilitation plan. These interventions included pursed-lip breathing, diaphragmatic (abdominal) breathing, and controlled deep-breathing patterns (Heefner et al., 2024). Each technique was carefully explained and demonstrated to ensure proper form and effective implementation. The patient was encouraged to utilize these breathing strategies during episodes of increased breathlessness, physical exertion, or activities known to trigger symptoms and anxiety. By slowing respiratory rate, improving oxygen exchange, and reducing air trapping, these techniques can help alleviate acute dyspnea and promote a greater sense of control over breathing. The exercises were recommended for regular daily practice, as well as on an as-needed basis, to support relaxation, enhance ventilation efficiency, and optimize overall respiratory function. As part of the integrative COPD management plan, these non-pharmacologic tools played an important role in improving symptom control and quality of life.

Monitoring and Follow-Up

Throughout the implementation of the integrative treatment plan, the patient was closely monitored by the healthcare team to evaluate therapeutic response and guide any necessary modifications. Regular outpatient follow-up visits were conducted to assess symptom control, functional status, and overall clinical stability. These visits provided an opportunity to track progress, identify early signs of exacerbation, and ensure that the management strategy remained aligned with the patient's evolving needs. Comprehensive clinical assessments were performed at each visit to evaluate respiratory status and overall disease severity (Tonga & Oliver, 2023). Objective pulmonary function testing, including spirometry, was utilized to measure FEV₁ and the FEV₁/FVC ratio, allowing for quantifiable evaluation of changes in airflow limitation and treatment response. In addition, arterial blood gas (ABG) analysis was conducted when indicated to assess oxygenation and ventilation status. These combined clinical and diagnostic measures ensured that both symptomatic improvement and physiological markers of lung function were carefully monitored within the integrative care framework.

The healthcare team also evaluated symptom burden and health-related quality of life using validated patient-reported outcome measures (PROMs), including the COPD Assessment Test (CAT) and the St. George's Respiratory Questionnaire (SGRQ) (Tonga & Oliver, 2023). These instruments provided valuable insight into the patient's subjective experience of disease, including breathlessness, cough severity, activity limitation, fatigue, and overall functional impact. PROMs were administered at regular intervals to monitor trends over time and assess the real-world effectiveness of the treatment plan. By integrating patient-reported data with objective clinical findings, the team was able to gain a more comprehensive understanding of disease progression and therapeutic response. This approach ensured that management decisions were not based solely on physiological metrics, but also reflected meaningful improvements in daily functioning and overall quality of life.

In addition to formal clinical assessments, the healthcare team prioritized ongoing, open communication with the patient to better understand lived experiences, address concerns, and monitor for any potential adverse effects related to the treatment plan. The patient was encouraged to promptly report changes in symptom severity, frequency of exacerbations, medication tolerance, or overall health status. This proactive communication model allowed for timely adjustments to the intervention strategy, ensuring that care remained individualized and responsive to the patient's evolving needs. At the outset of the program, follow-up visits were scheduled every four weeks to allow for close monitoring and early intervention when necessary (Tonga & Oliver, 2023). As the patient demonstrated clinical stability and measurable improvement over time, the interval between visits was gradually extended from every 4-6 weeks to every 8-12 weeks. Importantly, the patient received detailed education on recognizing warning signs that required immediate medical attention, including acute worsening of breathlessness, increased sputum production, changes in sputum color, new-onset chest tightness, or even subtle deviations from baseline COPD symptom patterns. This emphasis on early recognition and rapid response was essential to reducing the risk of severe exacerbations and maintaining long-term disease stability.

Throughout the monitoring and follow-up period, the healthcare team maintained a supportive and collaborative approach, engaging the patient in open dialogue about the treatment plan and any challenges encountered in adhering to recommendations. Barriers to implementation such as lifestyle adjustments, medication timing, or symptom fluctuations were discussed constructively, allowing the team to provide practical solutions and individualized guidance. Ongoing education was an integral component of care, empowering the patient to better understand the nature of COPD, the rationale behind each intervention, and the importance of long-term disease management (Tonga & Oliver, 2023). By fostering shared decision-making, the patient was encouraged to take an active role in managing health outcomes rather than remaining a passive recipient of care. Through consistent follow-up, clear communication, and the development of a strong therapeutic alliance, the healthcare team aimed to promote adherence, build confidence in self-management strategies, and ultimately enhance the patient's long-term quality of life while living with COPD.

Results and Outcomes

Changes in Clinical Parameters

When the integrative treatment plan was started, the patient underwent several clinical assessments after two months to determine the effect of the interventions on respiratory function and general health status. These assessment outcomes clarified changes in several parameters that demonstrated potential positive outcomes with the use of conventional treatments and natural medicine.

<i>Parameter</i>	<i>Baseline</i>	<i>Post-Treatment</i>	<i>Normal Range</i>
pH	7.38	7.40	7.35-7.45
PaCO ₂ (mmHg)	48	42	35-45
PaO ₂ (mmHg)	68	80	75-100
SpO ₂ (%)	94	97	94-100
FEV ₁ (% predicted)	45	65	>80
FEV ₁ /FVC ratio	0.55	0.70	>0.70

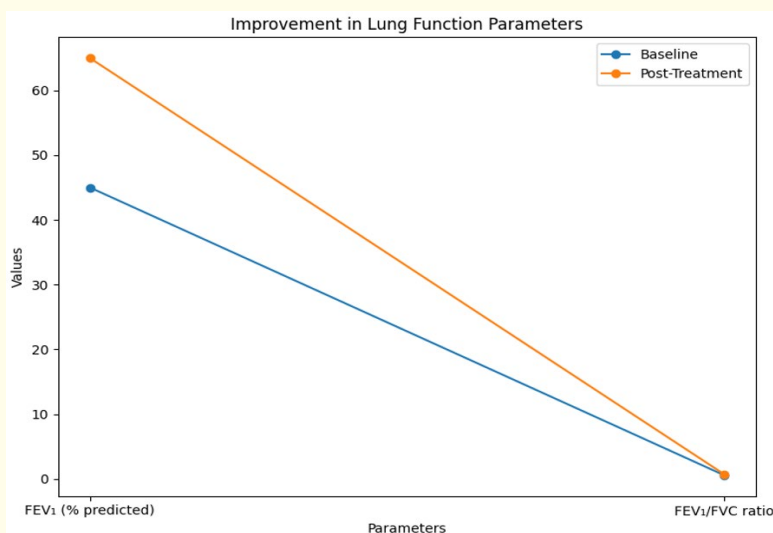
Table 1: Table summarizing the key clinical parameters before and after the integrative treatment.

Arterial Blood Gas Analysis

The patient's arterial blood gas (ABG) analysis demonstrated marked improvement compared to baseline values. The pH increased from 7.38 to 7.40, reflecting a shift toward optimal physiologic acid-base balance. This change suggests improved overall ventilatory efficiency and metabolic stability. Notably, the partial pressure of carbon dioxide (PaCO_2) decreased from 48 mmHg to 42 mmHg, indicating a reduction in hypercapnia and more effective carbon dioxide elimination. This finding is clinically significant in COPD management, as chronic CO_2 retention is a hallmark of impaired ventilation. In addition, oxygenation parameters improved substantially: the partial pressure of oxygen (PaO_2) increased from 68 mmHg to 80 mmHg, and oxygen saturation (SpO_2) on room air rose from 94% to 97%. These improvements reflect enhanced gas exchange and more efficient oxygen delivery to peripheral tissues. Collectively, the normalization of pH, reduction in PaCO_2 , and elevation in PaO_2 and SpO_2 indicate meaningful improvement in ventilatory function and pulmonary gas exchange (Meyer et al., 2021). These objective physiologic gains support the effectiveness of the comprehensive treatment strategy, suggesting that the integrative protocol addressed key pathophysiologic mechanisms underlying the patient's respiratory dysfunction.

Spirometry Results

The patient's spirometry findings demonstrated meaningful improvement following two months of integrative treatment. At baseline, the forced expiratory volume in one second (FEV_1) was 45% of the predicted value, consistent with moderate-to-severe airflow limitation. Upon completion of the intervention period, FEV_1 increased to 65% of the predicted value, reflecting a substantial improvement in expiratory airflow and overall lung function. Similarly, the FEV_1/FVC ratio improved from 0.55 at baseline to 0.70 at follow-up, indicating a marked reduction in airway obstruction and movement toward a less severe obstructive pattern (Meyer et al., 2021). This shift suggests improved airway patency, enhanced bronchodilation, and better expiratory mechanics. These objective spirometric gains provide quantitative support for the patient's clinical improvement and reinforce the effectiveness of the comprehensive management strategy. The observed increases in both FEV_1 and the FEV_1/FVC ratio suggest that the combined use of conventional pharmacotherapy, targeted nutraceutical support, structured exercise, and breathing rehabilitation contributed to reduced airway inflammation, improved ventilatory dynamics, and enhanced respiratory efficiency. Together, these results highlight the potential value of an integrative approach in optimizing pulmonary function and symptom control in COPD management.



Graph 1: A line graph showing the change in FEV_1 and FEV_1/FVC ratio from baseline to post-treatment.

Symptomatic Improvement

In addition to the objective improvements in clinical parameters, the patient reported improvement in the perceived COPD symptoms after the maximization of COPD management with an integrative holistic treatment approach.

Reduction in Shortness of Breath and Cough

One of the most significant clinical improvements reported by the patient was a marked reduction in shortness of breath (dyspnea). Prior to initiating the integrative treatment plan, the patient described persistent and activity-limiting breathlessness that significantly interfered with daily functioning. Although the patient had discontinued smoking, prior tobacco exposure had contributed to the progression of respiratory symptoms, including chronic dyspnea (National Heart, Lung, and Blood Institute, 2022). After two months of treatment, the patient reported that episodes of breathlessness were both less intense and less frequent. Activities that previously triggered significant respiratory distress such as walking moderate distances or performing light household tasks were now better tolerated. The patient also expressed increased confidence in engaging in physical activity without prolonged recovery periods or severe symptom flare-ups. In addition to improvements in dyspnea, the patient experienced a notable reduction in chronic productive cough. Morning coughing episodes, which had previously been frequent and disruptive, became less severe, and overall sputum production decreased. These improvements suggest a reduction in airway inflammation and excessive mucus secretion hallmark features of COPD pathophysiology. Collectively, these symptomatic changes align with the objective improvements observed in pulmonary function testing and support the effectiveness of the comprehensive management approach.

Decreased Frequency of Respiratory Infections

Another meaningful improvement reported by the patient was a substantial reduction in the frequency of respiratory infections. In the six months prior to initiating the integrative treatment plan, the patient experienced six respiratory infections requiring antibiotic therapy and oral corticosteroids. These recurrent infections not only contributed to symptom exacerbations but also increased the risk of further pulmonary decline. During the first two months following implementation of the treatment protocol, the patient did not experience any respiratory infections. This marked decrease in infectious episodes suggests improved immune resilience and enhanced stability of the respiratory tract. In COPD, respiratory infections are a major trigger for acute exacerbations and are closely associated with accelerated disease progression and increased healthcare utilization (National Heart, Lung, and Blood Institute, 2022). The reduction in infection frequency represents a clinically significant outcome, as fewer exacerbations are linked to improved quality of life, decreased hospitalizations, and slower decline in lung function. These findings suggest that the integrative management strategy may have contributed to strengthening immune defenses, reducing airway inflammation, and promoting greater respiratory stability, ultimately supporting better long-term disease control.

Impact on Quality of Life and Exercise Tolerance

The observed improvements in objective clinical parameters and symptom control translated into meaningful gains in the patient's overall quality of life and functional capacity. Prior to initiating the integrative treatment plan, COPD had significantly limited the patient's mobility and independence. Routine daily activities including basic personal care, household tasks, and participation in social or leisure activities were increasingly difficult due to persistent breathlessness and fatigue. As a result, overall well-being and life satisfaction were markedly diminished. After two months of treatment, the patient reported substantial improvement in daily functioning and energy levels (National Heart, Lung, and Blood Institute, 2022). Tasks that previously required significant effort could now be completed with greater ease and less respiratory distress. The patient described feeling more physically capable and less apprehensive about engaging in routine activities. Sleep quality also improved, as nighttime respiratory symptoms such as coughing and breathlessness decreased in frequency and severity. The patient reported more restful and uninterrupted sleep, which further contributed to improved daytime energy, mood, and overall resilience. Collectively, these functional and quality-of-life improvements underscore the broader impact of the integrative management strategy beyond physiologic measures alone.

In addition, the patient demonstrated a marked improvement in exercise tolerance. Physical activities that previously triggered early dyspnea and fatigue were now sustained for longer durations and at greater intensity levels before symptoms emerged. As part of a structured pulmonary rehabilitation program, the patient consistently participated in aerobic exercise sessions and progressively increased both the frequency and duration of these activities. This progressive conditioning reflects improved cardiopulmonary efficiency and muscular endurance. Enhanced exercise capacity is a critical outcome in COPD management, as regular physical activity plays a central role in preserving lung function, reducing exacerbation risk, improving metabolic health, and enhancing overall quality of life (National Heart, Lung, and Blood Institute, 2022). The patient's ability to tolerate greater levels of exertion without significant respiratory distress represents a meaningful functional gain. To objectively evaluate these improvements, validated assessment tools including the COPD Assessment Test (CAT) and the St. George's Respiratory Questionnaire (SGRQ) were utilized. These instruments provided quantifiable measures of symptom burden, functional limitation, and health-related quality of life. Improvements in questionnaire scores aligned with the patient's self-reported progress, further substantiating the effectiveness of the integrative management approach in enhancing both physiologic performance and daily functioning.

Medication Adjustments

As the patient's clinical status stabilized and objective measures improved, the healthcare team carefully reassessed the medication regimen to optimize therapeutic outcomes while minimizing the potential for long-term adverse effects. Given the favorable response to the integrative treatment approach, it became appropriate to gradually taper certain conventional medications particularly those associated with cumulative side effects when used frequently or chronically (Meyer et al., 2021). One notable adjustment involved a reduction in the use of short-acting beta-agonists, such as albuterol. As symptom frequency declined and exercise tolerance improved, the patient required rescue inhalation therapy less often. This decreased reliance on short-acting bronchodilators suggests improved baseline symptom control and enhanced airway stability. Reduced need for rescue medication is an important clinical indicator in COPD management, reflecting better day-to-day respiratory function and fewer episodes of acute bronchospasm. All medication adjustments were made cautiously and under close supervision, ensuring that therapeutic gains were maintained while supporting a streamlined and well-balanced treatment plan.

In addition, the healthcare team carefully monitored the patient's use of inhaled corticosteroids (ICS) and evaluated whether dose adjustments or gradual de-escalation were appropriate. ICS therapy plays an important role in COPD management, particularly for patients with frequent exacerbations or elevated inflammatory markers. However, long-term use especially at higher doses has been associated with increased risk of pneumonia and other potential complications. As the patient's clinical stability improved and exacerbation frequency declined, the risk-benefit profile of continued ICS therapy was reassessed (Meyer et al., 2021). Based on sustained symptom control and objective improvements, thoughtful modifications were considered, with any dose reductions implemented gradually and under close supervision to prevent destabilization. Ongoing communication with the patient was essential throughout this process. Regular discussions allowed the team to monitor for subtle symptom changes, assess tolerance, and ensure that medication adjustments were both safe and effective. This shared decision-making approach helped strike an appropriate balance between maximizing therapeutic benefit and minimizing pharmacologic burden, ultimately supporting long-term respiratory stability and patient-centered care.

It is important to emphasize that all medication adjustments were made in close collaboration with the patient's pulmonologist to ensure continuity of care and strict adherence to established evidence-based guidelines. The integrative treatment plan was not intended to replace conventional pharmacologic management, but rather to complement and optimize it in alignment with the patient's evolving clinical response. As the patient's condition stabilized, the healthcare team worked to thoughtfully align the medication regimen with the improved clinical profile, aiming to maintain therapeutic effectiveness while minimizing unnecessary pharmacologic burden. This approach sought to reduce the risk of long-term adverse effects associated with certain respiratory medications, including complications linked to prolonged or high-dose therapy (National Heart, Lung, and Blood Institute, 2022). The individualized and flexible approach to pharmacotherapy was a central element of the comprehensive care strategy. By integrating conventional treat-

ment with supportive therapies and continuously reassessing clinical status, the team aimed to enhance respiratory function, limit disease progression, and improve overall quality of life in a safe, patient-centered manner.

Discussion

Interpretation of the Findings

The results of this case study demonstrate the potential benefits of integrating natural medicine with conventional treatments in the management of COPD. The patient was a 64-year-old male with moderate to severe COPD; he gained tangible improvement in clinical indices, as well as symptoms, quality of life, and exercise tolerance by following a multi-faceted approach, including conventional pharmacotherapy, dual proprietary herbal formulations, and mind-body interventions (Celli & Wedzicha, 2019). The obtained positive changes in arterial blood gas analysis and spirometry data indicated that integrative treatment addressed the primary pathological mechanisms of COPD, including airway inflammation, bronchial spasms, and abnormalities of gas exchange. A decrease in PaCO₂ and an increase in PaO₂ and SpO₂ demonstrate that the patient has improved ventilation and oxygenation of the lungs, and an increase in FEV₁ and FEV₁/FVC ratio suggests that the patient has reduced airflow obstruction and improved lung function (Vogelmeier et al., 2017). Furthermore, patient-oriented dyspnea and cough, as well as the frequency of respiratory infections, are other findings that indicate the benefits of the integrative approach in managing the disease (Celli & Wedzicha, 2019). The shift in avoiding short-acting bronchodilators and the possibility of enhancing the use of inhaled corticosteroids also strengthen this approach to the control of COPD symptoms without the exacerbation of side effects caused by long-term administration of some medications.

Comparison with Conventional Treatment Approaches

Conventional treatment strategies for COPD primarily emphasize pharmacologic therapies such as bronchodilators and corticosteroids alongside non-pharmacologic interventions including smoking cessation, pulmonary rehabilitation, and supplemental oxygen therapy. These measures are foundational to COPD management and have been shown to improve symptom control and reduce exacerbation risk. However, despite their effectiveness, many patients continue to experience persistent symptoms, functional limitations, and progressive decline, reflecting the complex and multifactorial nature of the disease (Hikichi et al., 2018). COPD is not solely a disorder of airflow limitation; it involves chronic inflammation, oxidative stress, immune dysregulation, structural airway remodeling, and systemic effects that extend beyond the lungs. As such, a more comprehensive approach may be warranted in selected patients. The integrative model expands upon conventional pharmacologic care by incorporating evidence-informed natural compounds, targeted nutritional strategies, and structured lifestyle modifications aimed at addressing underlying pathophysiologic mechanisms (Soriano et al., 2020).

The proprietary blends utilized in this case included combinations of silica, vitamin C, trace minerals, N-acetyl L-tyrosine, curcumin, quercetin, and other bioactive compounds selected for their potential antioxidant, anti-inflammatory, immunomodulatory, and airway-supportive properties (Celli & Wedzicha, 2019). By targeting oxidative burden, inflammatory pathways, and tissue resilience, this integrative strategy sought to complement bronchodilation and symptom control with broader physiologic support. Through a biopsychosocial and systems-based framework, the integrative approach aimed not only to manage symptoms but also to enhance overall resilience, functional capacity, and long-term health outcomes potentially offering benefits beyond those achieved through a strictly pharmacologic model alone.

Potential Mechanisms Underlying the Observed Benefits

Several plausible mechanisms may help explain the positive outcomes observed with the integrative approach in this case study. The herbal and nutraceutical combinations incorporated into the treatment protocol contain bioactive phytochemicals known to exert anti-inflammatory, antioxidant, and immunomodulatory effects key targets in the pathophysiology of COPD (Barnes, 2018). For instance, curcumin, a principal component of Proprietary Blend II, has been extensively studied for its anti-inflammatory properties. Evidence suggests that curcumin can downregulate the production of pro-inflammatory cytokines and mediators such as tumor necrosis factor-alpha (TNF- α), interleukin-1 beta (IL-1 β), and interleukin-6 (IL-6), all of which play central roles in chronic airway inflammation

and disease progression in COPD (Barnes, 2018). By modulating these inflammatory pathways, curcumin may contribute to reduced airway inflammation and improved respiratory stability. Similarly, quercetin present in Proprietary Blend VI is a potent flavonoid antioxidant with demonstrated free radical-scavenging activity. Oxidative stress is a major contributor to tissue damage, mucus hypersecretion, and airway remodeling in COPD. By neutralizing reactive oxygen species and supporting endogenous antioxidant defenses, quercetin may help mitigate oxidative injury and preserve pulmonary function. Together, these mechanisms provide a biologically plausible rationale for the integrative strategy's role in reducing inflammatory burden and supporting respiratory health.

The trace minerals and vitamins included in the proprietary blends such as vitamin C, vitamin D3, and zinc may have further contributed to the observed clinical improvements. These micronutrients are well recognized for their immunomodulatory and anti-inflammatory properties, as well as their roles in supporting epithelial integrity, antioxidant defense, and tissue repair within the respiratory system. Adequate levels of these nutrients are particularly important in COPD, where chronic inflammation and impaired immune responses increase susceptibility to infection and delayed recovery. In addition to targeted supplementation, foundational lifestyle interventions including sustained smoking cessation, structured physical activity, and individualized nutritional support likely amplified the therapeutic effects of the integrative protocol (Safari et al., 2023). These interventions address modifiable risk factors, enhance functional capacity, and promote systemic resilience, all of which are critical in chronic respiratory disease management. The synergistic effect of pharmacologic therapy, nutraceutical support, and lifestyle modification provides a plausible explanation for the substantial improvements observed in objective clinical measures, patient-reported symptoms, and overall quality of life. By targeting multiple interconnected pathways involved in COPD pathophysiology such as inflammation, oxidative stress, immune dysregulation, and deconditioning the integrative approach may offer a more comprehensive and adaptive framework for disease management compared to conventional treatment alone.

Limitations and Strengths of the Case Study

Although this case study provides valuable insight into the potential benefits of combining natural medicine with conventional COPD management, several important limitations must be acknowledged. As a single-patient report, the findings cannot be generalized to the broader COPD population, particularly given the heterogeneity of disease presentation, severity, comorbidities, and individual treatment responses (Witte et al., 2023). COPD manifests differently across patients, and outcomes observed in one case may not be reproducible in others. Additionally, the absence of a control group and the lack of a randomized, placebo-controlled design limit the ability to draw definitive conclusions regarding causality or overall efficacy of the integrative approach (Firdaus et al., 2024). Improvements may have been influenced, in part, by placebo effects, natural disease variability, regression to the mean, enhanced adherence to conventional therapy, or other temporal factors unrelated to the integrative components. While the results are promising and hypothesis-generating, larger controlled clinical trials are necessary to more rigorously evaluate safety, efficacy, and reproducibility before broad clinical recommendations can be made.

Despite its limitations, this case study also possesses several strengths that support the credibility of the conclusions drawn. Objective clinical markers including arterial blood gas (ABG) analysis and spirometry were systematically measured throughout the course of treatment, providing quantifiable data to assess physiologic improvement and treatment response (Cao et al., 2023). These objective findings were further corroborated by patient-reported improvements in symptoms and validated questionnaire outcomes, including the COPD Assessment Test (CAT) and the St. George's Respiratory Questionnaire (SGRQ) (Witte et al., 2023). The alignment between physiologic measures and subjective reports strengthens the internal consistency of the observed outcomes. Additionally, the integrative model applied in this case was grounded in established evidence-based medical care, with natural compounds incorporated as complementary rather than replacement therapies. The proprietary botanical and nutraceutical blends were formulated with attention to specific mechanisms involved in COPD pathophysiology, including chronic inflammation, oxidative stress, immune dysregulation, and airway remodeling. By targeting these underlying processes in a structured and mechanistically informed manner, the treatment strategy aimed to enhance therapeutic synergy and improve the likelihood of clinically meaningful benefit.

Despite the acknowledged limitations, this case study also demonstrates several strengths that enhance the credibility of its conclusions. Objective clinical parameters such as arterial blood gas (ABG) analysis and spirometry were collected systematically, providing measurable and reproducible data to evaluate the patient's physiologic response to treatment (Cao et al., 2023). These objective findings were complemented by documented improvements in patient-reported outcomes, including validated instruments such as the COPD Assessment Test (CAT) and the St. George's Respiratory Questionnaire (SGRQ) (Witte et al., 2023). The convergence of objective metrics and subjective symptom improvement strengthens the overall internal validity of the case. Furthermore, the integrative approach employed in this study did not replace standard medical care but rather combined established evidence-based therapies with carefully selected natural compounds that possess identifiable mechanisms of action. The botanical and nutraceutical components of the proprietary blends were formulated with attention to key aspects of COPD pathophysiology, including chronic inflammation, oxidative stress, immune imbalance, and airway remodeling. By intentionally targeting these underlying mechanisms, the integrative strategy sought to enhance therapeutic effectiveness through a complementary and systems-based framework.

Implications for Clinical Practice

The findings of this case study carry meaningful implications for clinical practice in the management of COPD. They suggest that thoughtfully selected natural compounds, when used alongside conventional pharmacologic therapies, may offer additional benefits in symptom control, disease stabilization, and quality-of-life enhancement. For patients who continue to experience persistent symptoms despite standard care, a broader and more individualized management strategy may be warranted (Scoditti et al., 2019). These observations support the value of a comprehensive, multidisciplinary approach to COPD care. Collaboration with qualified integrative or naturopathic practitioners particularly those experienced in combining natural compounds with conventional medications may help ensure safe, coordinated, and mechanism-informed treatment planning.

Such collaboration should always prioritize evidence-based decision-making and clear communication among providers. Importantly, the incorporation of natural medicine must be individualized and grounded in scientific evidence rather than applied uniformly across all patients (Labaki & Han, 2020). Healthcare professionals should carefully evaluate the potential benefits and risks of natural products, assess possible interactions with prescribed medications, and monitor patients closely for efficacy and adverse effects. By maintaining a patient-centered, safety-focused framework, clinicians can explore integrative strategies responsibly while preserving the standards of evidence-based COPD care.

Importantly, an integrative approach should not replace established conventional therapies or foundational lifestyle interventions that remain the standard of care in COPD management, such as smoking cessation and structured pulmonary rehabilitation. Rather, natural therapies should be considered complementary strategies designed to enhance therapeutic outcomes by addressing the multifaceted inflammatory, oxidative, and immunologic processes underlying the disease (Scoditti et al., 2019). To strengthen the evidence base, larger randomized controlled trials and well-designed observational studies are needed to replicate the findings of this case study and more definitively evaluate the safety, efficacy, and long-term outcomes of integrative management strategies in COPD.

Future research should aim to clarify which specific natural compounds, dosing regimens, and therapeutic combinations are most effective, as well as how best to integrate them with conventional pharmacologic care. Advancing research in this area will help refine clinical protocols, identify patient populations most likely to benefit, and establish evidence-informed guidelines for combining Western medical therapies with complementary interventions. Such work is essential to developing a balanced, safe, and scientifically grounded integrative framework for COPD management.

Conclusion

In conclusion, this case study highlights the potential value of integrating natural medicine with conventional therapies in the management of COPD. In this 64-year-old patient with mild-to-moderate disease, implementation of a comprehensive, optimized treatment plan combining pharmacologic management with targeted botanical supplementation and structured lifestyle interventions was associated with meaningful clinical improvement. Objective gains were observed in arterial blood gas parameters and spirometry

results, while subjective measures demonstrated reductions in dyspnea, cough frequency, and respiratory infections. These physiologic and patient-reported improvements were accompanied by enhanced exercise tolerance and overall quality of life. Collectively, the findings suggest that a carefully structured integrative approach may address key pathophysiologic mechanisms of COPD such as inflammation, oxidative stress, and impaired ventilation while also improving day-to-day symptom control. Although further research is necessary to confirm reproducibility and generalizability, this case supports the potential role of evidence-informed integrative care as a complementary strategy in comprehensive COPD management.

The findings of this case study carry meaningful implications for clinical practice, highlighting the potential role of integrative medicine as a complementary strategy in COPD management. Given the complex, multifactorial nature of COPD and the variability in individual responses to both conventional and natural therapies there is value in considering carefully selected, evidence-informed natural interventions alongside standard treatment protocols. When thoughtfully integrated, such approaches may help address inflammatory burden, oxidative stress, immune regulation, and overall functional capacity. However, incorporation of natural therapies must be approached cautiously and on an individualized basis, with attention to potential drug-nutrient interactions, safety considerations, and patient-specific risk factors. While the outcomes observed in this case are promising, more rigorous research including randomized controlled trials and larger observational studies is necessary to establish the safety, reproducibility, and long-term efficacy of integrative strategies in COPD care. Strengthening the evidence base will be essential to guide responsible clinical implementation and optimize patient outcomes.

Future research should focus on establishing standardized integrative treatment protocols, identifying optimal dosing strategies for specific natural compounds, and further clarifying their mechanisms of action within the context of COPD pathophysiology. Rigorous investigation is needed to determine which agents provide the greatest therapeutic benefit, at what concentrations, and in which patient populations. Additionally, larger longitudinal studies should evaluate the cumulative impact of integrative management on disease progression, exacerbation frequency, hospitalization rates, medication utilization, and overall healthcare resource consumption. Understanding these broader clinical and economic outcomes will be essential in determining the true value of integrative strategies in chronic respiratory care. As future research continues to validate and expand upon the findings presented in this case, the field of integrative medicine may play an increasingly defined role in COPD management. Ultimately, this could support the development of comprehensive, evidence-based treatment models that combine conventional and complementary therapies to better address the complex and chronic nature of COPD.

References

1. Barnes PJ. "Targeting cytokines to treat asthma and chronic obstructive pulmonary disease". *Nature Reviews Immunology* 18.7 (2018): 454-466.
2. Beijers RJHCG, Steiner MC and Schols AMWJ. "The role of diet and nutrition in the management of COPD". *European Respiratory Review* 32.168 (2023).
3. Cao X., et al. "Advances in traditional Chinese medicine for the treatment of chronic obstructive pulmonary disease". *Journal of Ethnopharmacology* 307 (2023): 116229.
4. Celli BR and Wedzicha JA. "Update on clinical aspects of chronic obstructive pulmonary disease". *New England Journal of Medicine* 381.13 (2019): 1257-1266.
5. Firdaus A., et al. "Medicinal plants in the treatment of respiratory diseases and their future aspects". *Recent Patents on Biotechnology* (2024).
6. Halpin DMG., et al. "Global Initiative for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease: The 2020 GOLD Science Committee Report on COVID-19 & COPD". *American Journal of Respiratory and Critical Care Medicine* 203.1 (2020).
7. Heefner A., et al. "The role of nutrition in the development and management of chronic obstructive pulmonary disease". *Nutrients* 16.8 (2024): 1136.

8. Hikichi M, Hashimoto S and Gon Y. "Asthma and COPD overlap pathophysiology of ACO". *Allergology International* 67.2 (2018): 179-186.
9. Labaki WW and Han MK. "Chronic respiratory diseases: A global view". *The Lancet Respiratory Medicine* 8.6 (2020): 531-533.
10. Li J., et al. "Effects of Chinese herbal medicine on acute exacerbations of COPD: A randomized, placebo-controlled study". *International Journal of Chronic Obstructive Pulmonary Disease* 15 (2020): 2901-2912.
11. Li J., et al. "The anti-inflammatory effect of a combination of five compounds from five Chinese herbal medicines used in the treatment of COPD". *Frontiers in Pharmacology* 12 (2021).
12. Lucas R., et al. "Dichotomous role of tumor necrosis factor in pulmonary barrier function and alveolar fluid clearance". *Frontiers in Physiology* 12 (2022).
13. Meyer NJ, Gattinoni L and Calfee CS. "Acute respiratory distress syndrome". *The Lancet* 398.10300 (2021).
14. National Heart, Lung, and Blood Institute. *Acute Respiratory Distress Syndrome - What Is Acute Respiratory Distress Syndrome?* (2022).
15. Ruvuna L and Sood A. "Epidemiology of chronic obstructive pulmonary disease". *Clinics in Chest Medicine* 41.3 (2020): 315-327.
16. Safari S., et al. "Curcumin effects on chronic obstructive pulmonary disease: A systematic review". *Health Science Reports* 6.3 (2023).
17. Scoditti E., et al. "Role of diet in chronic obstructive pulmonary disease prevention and treatment". *Nutrients* 11.6 (2019): 1357.
18. Soriano JB., et al. "Prevalence and attributable health burden of chronic respiratory diseases, 1990-2017: A systematic analysis for the Global Burden of Disease Study 2017". *The Lancet Respiratory Medicine* 8.6 (2020): 585-596.
19. Tonga KO and Oliver BG. "Effectiveness of pulmonary rehabilitation for chronic obstructive pulmonary disease therapy: Focusing on traditional medical practices". *Journal of Clinical Medicine* 12.14 (2023): 4815.
20. Vogelmeier CF, et al. "Global strategy for the diagnosis, management, and prevention of chronic obstructive lung disease 2017 report: GOLD executive summary". *American Journal of Respiratory and Critical Care Medicine* 195.5 (2017): 557-582.
21. Witte JA., et al. "Implementing integrated care guidelines in asthma and COPD: It ain't easy!". *Heliyon* 9.11 (2023): e21540.