

## Kronik Obstrüktif Akciğer Hastalığının Tedavisinde Apiterapi (Arı Ürünleri) Kullanımına Genel Bir Bakış

### An Overview of The Use of Apitherapy (Bee Products) in The Treatment of Chronic Obstructive Pulmonary Disease

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**Özet:** Bu makalenin amacı, Kronik Obstrüktif Akciğer Hastalığı (KOAH)'nda arı ürünlerinin kullanımını araştırmak, bu kullanımların sağlık ve özellikle hemşirelik bakım hizmetlerinde bakımın kalitesinin artırılması açısından kullanılabilirliğini göstermektir. Yaygın ve kronik bir hastalık olan KOAH önemli bir halk sağlığı problemidir. Son yıllarda Geleneksel, Tamamlayıcı ve Bütünlük Tıp ilgisinin artması ve sağlık bakım hizmetlerinde kullanımlarının yaygınlaştırılması KOAH hastaları için de umut verici bir yol olarak görülmeye başlanmıştır. Apiterapi ürünleri farmakolojik tedavilere eklenmesinin yanı sıra öksürük gibi bazı KOAH semptomlarını rahatlatarak hastaların hastalık sürecindeki algılarını, motivasyon düzeylerini ve sürece aktif katılımlarını iyileştirmektedir. Sağlık ve özellikle hemşirelik bakım hizmetlerinde profesyonel, bütüncül ve optimum düzeyde bir bakımın sağlanabilmesi için Geleneksel, Tamamlayıcı ve Bütünlük Tıp uygulamalarının ve apiterapi ürünlerinin hizmet içi ve hasta eğitim içeriklerine dahil edilmesi; eğitilmiş ve sertifikalı uzman kişilerce uygulanması gerektiğinin kavratılması ile bilinçli ve kontrollü kullanımların sağlanması ve bu uygulamalara yönelik daha kapsamlı araştırmaların yapılarak kanıt düzeylerinin artırılması önerilebilir.

**Anahtar Kelimeler:** Apiterapi, arı ürünleri, hemşirelik, KOAH, sağlık bakım hizmeti.

**Abstract:** This review article's objectives are to examine the application of bee products in Chronic Obstructive Pulmonary Disease (COPD) and to show how useful they are for raising the standard of healthcare, particularly for nursing care services. COPD, a widespread and chronic condition, is a significant public health issue. A promising approach for COPD patients has emerged in the form of the growing interest in traditional, complementary, and integrative medicine as well as the extensive application of these treatments in healthcare services in recent years. Apart from being used into pharmaceutical therapies, apitherapy products alleviate certain symptoms of COPD, such cough, thereby enhancing patients' understanding, drive, and proactive involvement in the illness progression. It may be advised that Traditional, Complementary, and Integrated Medicine practices and apitherapy products be included in in-service and patient training materials, that they be applied by qualified and certified specialists, that they be used consciously and cautiously, and that more thorough research be done on these practices to increase the level of evidence in order to provide a professional, holistic, and optimal level of care in health, and especially in nursing care services.

**Keywords:** Apitherapy, bee products, nursing, COPD, health care.

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## INTRODUCTION

Despite being preventable and treated, chronic obstructive pulmonary disease (COPD) is becoming a more significant global public health issue due to its significant role in morbidity and death (Scoditti et al., 2019; Adeloje et al., 2022; Arezina et al., 2023; GOLD, 2024). It is estimated that 10.3% of people globally have COPD, and that the disease causes around three million deaths annually. However, within low- and middle-income nations, smoking prevalence is predicted to rise, while in high-income countries, the aging population is predicted to raise COPD prevalence (GOLD, 2024).

People with chronic illnesses sometimes feel hopeless because of the experiences they had with the illness and the medical care they received (Kılıç & Parlar Kılıç, 2022). Thus, Knowing patients' perspectives on the illness and their levels of motivation throughout the course of therapy and care is crucial. As accordingly, individual motivation levels are critical to achieving successful care with symptom and therapy management in COPD, a chronic condition (Karaçar & Demirkıran, 2024). The change process starts with motivation, which is defined as an individual's adoption of certain change tactics as a way of life (Ögel, 2009). Furthermore, motivating factors influence how well people manage their diseases by influencing how they view the challenges they encounter along the way (Miller & Rollnick, 2013).

In light of the rising prevalence of chronic disorders, their social and economic impact, and their cost-effectiveness, the World Health Organization (WHO) draws attention to the management of chronic diseases (WHO, 2023). Health care systems incur significant financial expenditures due to COPD, one of the potentially fatal conditions. The application of traditional, complementary, and integrated therapies (TCIM) in the treatment of illnesses has shown significant growth in recent years (Poursaleh et al., 2022).

In light of this information, the purpose of this review study is to examine the application of bee products in the treatment of chronic conditions like COPD. It also aims to add to the body of literature by examining the effects of these applications on the standard of holistic health care, particularly in the area of nursing care, and to offer expert and optimal care services.

### 1. Chronic Obstructive Pulmonary Disease (COPD)

According to the Global Initiative for Chronic Obstructive Lung Disease (GOLD), COPD is characterized by a progressive decrease in maximum expiratory flow over time as a result of airflow obstruction brought on by anomalies in the alveoli and/or airways (GOLD, 2024). While the morbidity and mortality rate linked with COPD continues to rise, it is reported that COPD is the third greatest cause of death worldwide; in Turkey, respiratory disorders rank third, accounting for 45.6% of all fatalities (Kilic et al., 2024). Moreover, respiratory system disorders rank third among Turkey's major causes of death with 13.2%, according to the Turkish Statistical Institute's (TÜİK) death and cause of death statistics for 2023 (TÜİK, 2024). Consequently, COPD is a worldwide health issue that requires attention because it is a chronic disease with rising rates of morbidity and death among respiratory system diseases (Karaçar & Demirkıran, 2024).

Gene-environment interactions within individuals can be the primary cause of COPD. These interactions have the potential to harm the lungs and/or change how the body develops and ages normally. Mutations causing  $\alpha$ 1-antitrypsin deficiency in the SERPINA1 gene are a genetic risk factor for COPD, an epidemiologically rare condition (GOLD, 2024; Arezina et al., 2023). Infections of the respiratory tract, abnormal lung development, the presence of comorbid diseases (diabetes, hypertension, kidney disease, hypertension, obesity, smoking, alcohol use, exposure to air pollution, and toxic particles) are

additional risk factors for COPD (GOLD 2024; Poursaleh et al., 2024).

The symptoms of COPD might vary depending on the patient's unique traits and the course of treatment. This has an impact on patients' stress levels regarding the illness and the process of treatment, as well as the frequency and intensity of their symptoms. Dyspnea, wheezing, coughing (with or without sputum), dizziness, activity restriction, nausea, vomiting, acute exacerbations, and exhaustion are symptoms indicative of COPD (Tülüce & Kutlutürkan, 2018; GOLD, 2024; Poursaleh et al., 2024). Weakness, lethargy, weariness, dry mouth, worry, sadness, hopelessness, shifts in consciousness, and difficulty sleeping can accompany these symptoms. Rises in COPD symptoms during the illness and treatment phase have a detrimental impact on daily living activities, treatment compliance, self-efficacy, self-management abilities, and overall quality of life (Tülüce & Kutlutürkan, 2018).

Apart from the myriad adverse consequences of COPD, like anxiety and despair, the way in which individuals with the illness experience it and how it progresses is critical to the therapeutic strategy. People suffering from COPD frequently experience dread or panic as a result of dyspnea (shortness of breath), as well as concerns about the disease's progression or the end of life. Patients with COPD may eventually become socially isolated as a result of physical performance limits, which can raise anxiety and depressive symptoms (Yayan & Rasche, 2023).

To prevent or postpone the development of psychological and functional consequences, manage symptoms, minimize the frequency of exacerbations, and maximize disease management are the primary goals of treatment for COPD (Arezina et al., 2023; Poursaleh et al., 2024). Pharmacologic therapies include inhaled bronchodilators, corticosteroids, and combination therapies when needed, along with non-pharmacologic therapies like oxygen therapy,

pulmonary rehabilitation, nicotine replacement, and noninvasive ventilation (Arezina et al., 2023; GOLD, 2024).

## **2. Traditional, Complementary And Integrative Medicine (TCIM)**

The terms "traditional," "complementary," "alternative," or "integrative" medicine refer to methods that have been employed in addition to contemporary medicine to cure or prevent diseases throughout history. While these terms are occasionally used synonymously and in combination, there are semantic distinctions between them (WHO, 2000; Kaya et al., 2020; Öztürk et al., 2020;).

Traditional medicine, which has a long history, is used in health protection, prevention, diagnosis, treatment, and care of physical and mental disorders. It is based on theories, beliefs, and experiences peculiar to different cultures (WHO, 2000; Öztürk et al., 2020). Forming the basis of medical science, the concept arose from the search for natural remedies to treat diseases. Through observation and trial and error, information was gathered and the idea was culturally transmitted from generation to generation (Öztürk et al., 2020).

Methods utilized in addition to contemporary medical treatments are referred to as "complementary" when they are combined with conventional medicine, and as "alternative" when they are employed in place of conventional medicine (NCCIH, 2021). Different from the scientific treatment procedures utilized in conventional medicine, complementary and alternative medicine uses techniques applied by qualified and certified specialists. Likewise, the WHO highlights that complementary and alternative medicine practices are distinct from traditional medicine, and that the term "traditional medicine" encompasses a variety of procedures and methods reflecting regional and national variances (Öztürk et al., 2020). The goals of complementary medicine are to enhance the benefits of contemporary medicine, promote healing, look into

or lessen medication side effects, and assist patients and their families. While the terms have been used interchangeably worldwide and in Turkey for many years, the term "traditional and complementary medicine" is now more commonly used to emphasize that complementary and alternative medicine can be a therapeutic option rather than an alternative for it. In this regard, practices falling under the purview of Traditional and Complementary Medicine Practices (GETAT) are still in use in Turkey as well as throughout the world. (Talhaoğlu, 2021; Dikmen, 2023).

Integrative medicine is a concept that has emerged as a result of the health sector's movement towards a comprehensive and patient-centered approach (Kalariya et al., 2023). Integrative medicine integrates complementary and alternative therapies with standard scientific or Western medicine (NCCIH, 2021; Kalariya et al., 2023). In this context, integrative medicine prioritizes treating patients holistically by considering their mental, emotional, spiritual, and social health in addition to their physical health (Kalariya et al., 2023). To improve and sustain health in this environment, integrative medicine incorporates a variety of therapies and lifestyle modifications. Studies supporting the benefits of integrative medicine in terms of quality of life and morbidity outcomes are reportedly still ongoing (Ahuja et al., 2023).

Five subgroups have been identified by the National Center for Complementary and Integrative Health (NCCIH) based on complementary health approaches:

1. Nutritional (special diets, dietary supplements, herbs, and probiotics etc),
2. Psychological (mindfulness etc),
3. Physical (massage, spinal manipulation etc),
4. Combinations such as psychological and physical (yoga, tai chi, acupuncture, dance or art therapies etc) or psychological and nutritional (mindful eating etc),
5. Other complementary health approaches (the practices of traditional healers, Ayurvedic

medicine, traditional Chinese medicine, homeopathy, naturopathy, and functional medicine etc) (NCCIH, 2021).

On 21 March 2018, the GETAT Regulation in Turkey was updated to determine the GETAT application methods, the training and authorization of the people who will apply these methods, and the working procedures and principles of the health institutions where these methods will be applied. (Cumhurbaşkanlığı, 2018). Among the therapies recognized by this regulation are Acupuncture, Apitherapy, Phytotherapy, Hypnosis/Hypnotherapy, Leech Therapy, Homeopathy, Chiropractic, Cupping/Pharmacy, Larva Therapy, Mesotherapy, Prolotherapy, Osteopathy, Ozone Therapy/Treatment, Reflexology, and Music Therapy. Furthermore, the regulations encompass comprehensive information regarding the definitions and principles of application of these practices, the conditions under which they can and cannot be applied, the qualifications of the personnel responsible for implementing them, and the medical devices and equipment that will be utilized during treatment (Cumhurbaşkanlığı, 2018).

### **3. Bee Products (Apitherapy)**

Products made from plant and animal species still contribute significantly to health in the prevention and treatment of numerous diseases, even in the face of tremendous advancements in modern medicine. The prevention and treatment of chronic diseases is one area in which natural products and their active constituents are particularly utilized (Gajski et al., 2024). Apitherapy is one prominent TCIM application that is becoming more and more popular (Widjanarko et al., 2024). In the context of GETAT practices, "apitherapy," which is widely employed as a treatment-supporting technique in nations like the United States of America, China, and many European nations, is also frequently used in Turkey (Cumhurbaşkanlığı, 2018; Öztürk et al., 2020).

Honey bee products are employed for medicinal purposes in a TCIM technique called apitherapy. Because they contain biologically active components, apitherapy products have been utilized historically for both disease prevention and treatment, in addition to being consumed as food (Kavurmacı & Yıldız, 2024; Gajski et al., 2024).

The use of bee products, such as pollen, honey, jelly, propolis, royal jelly, bee bread, and bee venom, for the prevention and treatment of various ailments is one of the most popular uses of apitherapy products. Further, these products have been reported to have a variety of pharmacological and pharmaceutical properties, including anti-inflammatory, antidiabetic, anticancer, analgesic, neuroprotection, and protective effects against renal damage, wound healing, dermato-protective, immunomodulatory, antioxidant, antibacterial, and antiviral effects (Cumhurbaşkanlığı, 2018 Öztürk et al., 2020; Bindlish & Sawal, 2024; Gajski et al., 2024; Jodidio & Schwartz, 2024; Kavurmacı & Yıldız, 2024; Sadek et al., 2024; Widjanarko et al., 2024).

The use of apitherapy products can be contraindicated in certain situations (children under five, pregnancy and breastfeeding, infections, post-vaccination), and there are potential side effects (hyperventilation, edema, itching, rash, fatigue, anorexia, increased risk of bleeding, nausea, vomiting, headache, nasopharyngitis). Apitherapy products have therapeutic effects on many other body systems, including cardiovascular diseases, diabetes, respiratory diseases such as asthma-COPD, cancer, autoimmune diseases, liver diseases, neurological diseases, musculoskeletal diseases, and skin care. Thus, in order to avoid unfavorable outcomes like anaphylaxis, allergy testing must be done before the use of apitherapy products (Jang & Kim, 2020; Jodidio & Schwartz, 2024; Sadek et al., 2024).

#### **4. Applications of Apitherapy For Chronic Obstructive Pulmonary Disease**

Dikmen (2023) reports that TCIM applications have gained significant traction in the global and Turkish contexts for disease treatment, despite scientific and technological advancements (Dikmen, 2023). Patients with chronic diseases are more likely to turn to TCIM methods when looking for a new approach because of things like long-term treatments, the possibility of unwanted side effects from medications used in the treatment and care process, reluctance to use pharmaceutical methods, the belief that natural products won't have any side effects, the difficulty and expense of accessing medical treatments, the inability to receive the anticipated positive results from medical treatments, and pessimistic notions about what the disease process may bring (Öztürk et al., 2020; Yel & Karadakovan, 2020; Arezina et al., 2023). Age, education level, economic standing, disease stage, lifestyle, food and physical activity, cultural and religious views, geographic location, and ethnic origin are among the factors that typically influence the utilization of TCIM approaches (Yel & Karadakovan, 2020; Kilic et al., 2024).

Since COPD is a chronic illness, it is said that there is no medication that can fully treat the condition (Arezina et al., 2023) and that the available therapies are insufficient to control the progression of the disease. Patients with COPD frequently utilize TCIM applications despite advancements in pharmacologic therapies (Kilic et al., 2024). Patients with COPD may potentially use TCIM techniques due to the growing interest in these techniques in recent years. Upon reviewing the research, it becomes evident that TCIM approaches, such as apitherapy, are utilized for managing COPD symptoms during both the illness's treatment and aftercare phases.

Coughing has a substantial impact on COPD patients' quality of life. Products made by bees, including honey, are frequently eaten and used as medication. Honey is the first option sweetener for

cough medications, even if it is employed in the creation of herbal treatments under the purview of herbal medicine (WHO, 2000). In addition to being a pleasurable sensation for patients, the sweet taste also has certain functions. By influencing the respiratory tract with their emollient qualities to reduce cough and by controlling the production of endogenous opioids with analgesic effects, sweeteners can help patients (Pecoraro et al., 2024).

Apitherapy is believed to help significantly improve pulmonary parameters in COPD, a chronic lung illness with a chronicization period (Widjanarko et al., 2024).

COPD is a gradual, incurable illness that can be avoided. Emphysema is brought on by persistent inflammation, remodeling of the tiny airways, and lung tissue deterioration caused by COPD. Emphysema, the primary symptom of COPD, has been shown to benefit from propolis' ability to restore alveolar gaps and prevent acute lung inflammation through its anti-inflammatory and antioxidant properties (Barroso et al., 2017). The goal of the current COPD treatment is to lessen the quantity and frequency of exacerbations.

For this reason, novel approaches to treatment-such as adjunctive therapy-are crucial. Zuza et al. aimed to determine the differences in oxidative stress and inflammation parameters in COPD patients treated with N-acetyl cysteine (NAC) alone or with a combination of NAC and propolis (NACP). Propolis may be helpful in the treatment of COPD patients, especially those who are in the exacerbation phase, as treatment with NACP was found to be more effective than treatment with NAC from the perspectives of oxidative stress and inflammatory status (Zuza et al., 2022).

Research has demonstrated the antibacterial, antioxidant, antiviral, antifungal, and anti-inflammatory properties of propolis, in addition to its advantageous effects on tissue regeneration. The application of propolis-containing mucolytic drugs and N-acetylcysteine in the treatment of COPD has been made possible by scientific advancements in

the pharmaceutical sector. Kolarov et al. sought to determine the efficacy and safety of orally administered mucolytic N-acetylcysteine and propolis. Peroral NACP at high doses has been shown to be safe, enhance quality of life, and lessen the intensity of symptoms including expectoration and cough. When combined with conventional inhaled medication, NACP, which possesses mucolytic, anti-inflammatory, and antioxidant properties, may lessen the frequency of acute exacerbations in patients with COPD exhibiting moderate to severe symptoms (Kolarov et al., 2022).

The steady decline in lung function and general health is accelerated by acute exacerbations of COPD (AECOPD). To prevent AECOPDs, N-acetylcysteine (NAC) and natural propolis have demonstrated pharmacological capabilities that treat key pathophysiological processes causing COPD and can be used in conjunction with maintenance therapy for the disease. Using propolis and NAC together to lower COPD exacerbation rates raised safety and dose-dependent efficacy concerns, which were the focus of the Buha et al. investigation. A positive safety profile and formulation efficacy were confirmed by the oral combination of natural propolis and NAC (Buha et al., 2022).

For the treatment of illnesses and a better quality of life, supplementary and alternative therapies are advised by Persian medicine. Though this varies according to the type and variances in lung ailments, it is usual in traditional medical texts to add honey to a herbal mixture to offer healing. Honey was combined with different plant extracts to produce new herbal mixes. Compound Honey Syrup (CHS) was made by combining extracts of ginger, cinnamon, saffron, cardamom, and galangal with honey. These extracts have anti-inflammatory, antibacterial, and antitussive properties. Poursaleh et al.'s study sought to determine if a formulation of compound honey syrup was effective for COPD patients. According to the research, compound honey syrup has been shown to be a safe and

effective supplementary medication that can help COPD patients live better lives (Poursaleh et al., 2022).

Patients with COPD may benefit from honey in terms of improved quality of life, reduced symptoms, improved nutrition, and ease of breathing. A 6-month regimen of supplementing with honey was found to be helpful in enhancing the quality of life for individuals with COPD, according to a study by Muhammad et al. Research revealed that medium- and long-term improvements in overall quality of life were more favorable for COPD patients who used honey supplements (Muhamad et al., 2017).

According to the results of a study conducted to determine nurses' knowledge and attitudes towards apitherapy, it was found that a vast majority of the nurses had no sufficient knowledge about apitherapy. it can be asserted that the nurses had no sufficient and accurate knowledge about apitherapy. Also, the knowledge and usage levels of the nurses for other bee products, except for honey, were low. This reveals the importance of informing nurses about apitherapy during their education process (Kavurmacı & Tan, 2019).

## **CONCLUSION AND RECOMMENDATIONS**

Healthcare providers should have the necessary tools, expertise, and understanding of TCIM methods and practices due to the growing societal adoption of these techniques and patients' desire to actively participate in their own treatment and make appropriate and safe decisions (Kaya et al., 2020). Nonetheless health practitioners must carry out scientific study, offer trustworthy information, and appropriately educate and monitor healthy and sick individuals in order for the positive effects of apitherapy products to be used safely for therapeutic purposes (Kavurmacı & Yıldız, 2024). Furthermore, encouraging people to adopt conscious behaviors during the treatment and care process can help manage chronic illnesses like

COPD more effectively by raising their motivation levels (Karaçar & Demirkıran, 2024). By looking ahead, the bulk of health professionals-nurses-should establish nursing practices pertaining to the application of TCIM, identify practical approaches, and mentor others in the appropriate and efficient use of TCIM techniques (Kaya et al., 2020).

In relation to preserving the health of both healthy and ill patients, nurses actively participate in non-pharmacological and TCIM therapies. These procedures constitute the cornerstone of holistic care, embody the art of nursing, and facilitate close connection between the nurse and the patient (Ghazavi et al., 2015; Kaya et al., 2020). Through effective communication and collaboration, nurses should challenge patients' use of TCIM techniques; they should assess the benefits and drawbacks of these approaches for patient care and treatment, as well as how they may affect how patients interact with medications during their course of care. Furthermore, nurses should increase their TCIM knowledge and proficiency in order to counsel and advise patients and ensure that they have the necessary equipment (Yel & Karadakovan, 2020).

Despite the fact that people with chronic illnesses like COPD implement TCIM activities knowing there won't be any negative consequences and embrace them as natural interventions along the course of their illness, these practices can have unintended consequences. In light of this, it may be advantageous to provide holistic care by educating people about the present and deliberate application of TCIM practices in the education of patients and healthy individuals, and by incorporating these practices into tailored nursing care.

## **Contribution To The Field**

Since bee products have been used for so long and are so beneficial in the healthcare industry, using them to treat and care for patients can be a very valuable approach to meet clinical objectives and give the best possible care. The nursing profession is still in existence because it acknowledges that humans are bio-psycho-social entities and

concentrates on promoting and preserving health while attending to the needs of the individual on all levels. Since the founding of the profession, nurses have included TCIM methods into their practices (Kaya et al., 2020). According to Stavarski et al. (2019), positive nurse-patient relationships can change people's perspectives of the disease process and give patients more optimism (Stavarski et al., 2019). Furthermore, the deliberate and prudent application of TCIMs may be viewed as a potential cure for persistent illnesses and aid in managing symptoms, enhancing life satisfaction and quality of life, promoting job satisfaction, and lowering

detrimental psychological elements like social isolation, anxiety, depression, and stress.

To provide the best care possible in the healthcare industry, it will be helpful to enhance people's understanding of chronic conditions like COPD, make sure that people actively participate in the disease process, raise awareness of TCIM and pharmaceutical treatments, and ensure that these treatments are used carefully and responsibly by professionals who have received the necessary training and certification.



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