

## Turmeric as a Traditional Medicinal Plant in Selected Countries: A Review

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### ABSTRACT

Medicinal plants play a crucial role in both traditional and modern healthcare systems worldwide, providing abundant bioactive compounds essential for disease prevention and drug discovery. Globally, thousands of plant species are known for their therapeutic value and form the basis for traditional medical practices such as Ayurveda, Traditional Chinese Medicine, Unani, African traditional medicine, and other indigenous systems. Among several of these plants turmeric (*Curcuma longa*) holds a distinguished status due to its long-standing ethnomedicinal applications and well-established pharmacological effects supported by scientific research. This review emphasizes the importance of turmeric as a medicinal plant in selected countries and examines its cultivation practices, processing methods, and socio-economic importance. Overall, the review underscores turmeric's continued cultural significance and economic value, as well as its strong potential for enhancing agricultural productivity, integration into healthcare systems, and pharmaceutical advancement.

**Keywords:** Turmeric, Traditional medicine, Medicinal Plants, *Curcuma longa*, and Health care system.

### 1.0 INTRODUCTION

Medicinal plants include various types of plants used in herbalism and some of these plants have a medicinal activity. These medicinal plants are considered as a rich source of ingredients which can be used in drug development and synthesis. These plants play a critical role in the development of human cultures around the world. Medicinal plants include but not limited to ginger, garlic, turmeric, green tea, onion, cinnamon, moringa, and fortid. Medicinal plants are frequently used as raw materials for extraction of active ingredients which are then used in the synthesis of different drugs (El-Saadony *et. al.*, 2022).

Medicinal plants comprise a vast and diverse group of plant species that are used in traditional, complementary, and modern medicine for the prevention and treatment of diseases. Globally, more than 50,000 plant species are estimated to possess medicinal value, with many forming the foundation of traditional medical systems such as Ayurveda, Traditional Chinese Medicine (TCM), Unani, African traditional medicine, and indigenous healing practices. In recent decades, medicinal plants have gained renewed scientific interest due to their rich content of bioactive secondary metabolites, such as alkaloids, flavonoids, phenolics, terpenoids, glycosides, and essential oils (Aremu *et. al.*, 2024).

Medicinal plants play a crucial role in primary healthcare particularly in developing countries where

the World Health Organization estimates that over 80% of the population relies on plant-based medicines for basic health needs (Wang *et al.*, 2025). Beyond traditional use medicinal plants serve as critical raw materials for modern drug discovery and development with many pharmaceutical drugs either directly derived from plants or inspired by plant-based compounds. Examples include anticancer agents, anti-inflammatory drugs, antimalarials, antimicrobials, and cardiovascular medicines (El-Saadony *et. al.*, 2025).

Turmeric's bioactive compound curcumin has been widely shown to reduce inflammation and oxidative stress which are key in chronic diseases such as arthritis, cardiovascular disease, and metabolic disorders. Studies confirm these properties and mechanisms in both traditional and modern settings (Tian *et. al.*, 2025).

### 2.0 TURMERIC AS A TRADITIONAL MEDICINAL PLANT IN INDIA

*Curcuma longa* is a perennial, flowering herb native to South Asia and a member of the ginger family, Zingiberaceae (Priyadarsini *et al.*, 2003). Commonly known as the "Golden Spice of India," turmeric is obtained from the rhizomes of the plant. Its cultivation requires annual rainfall and an average temperature ranging between 20 and 30°C (68–86°F). The plant is characterized by underground rhizomes, elliptical leaves, flowers borne on a pedicel with compact spikes, and it can reach a height of about one meter (approximately 3 feet 3 inches). The rhizomes are

aromatic and exhibit a yellow to orange coloration (Jadhav and Jagadale, 2018). Turmeric is a highly valued medicinal plant due to its rich composition of bioactive compounds. Traditionally, these compounds have been used in folk medicine to manage ailments such as bile duct disorders, atrophy, cough, diabetic foot ulcers, liver dysfunction, rheumatoid arthritis, and sinus infections (Rathod *et al.*, 2019). India, renowned for producing high-quality turmeric (Haldi), is the world's leading producer and exporter. In addition, the rhizomes of *Curcuma montana* are traditionally consumed orally in crushed form to treat fever. Ethnobotanical applications of turmeric are diverse (Kumar *et al.*, 2017). Powdered rhizome paste is applied to treat skin conditions, while a thin layer of paste is commonly used for cosmetic purposes on the hands and face. A mixture of turmeric powder and milk is traditionally consumed as an expectorant to relieve cough. Turmeric powder is also known for its anti-inflammatory, carminative, and blood-purifying properties. Beyond its medicinal value, turmeric is widely used as a spice to enhance the flavor and color of foods and plays an important role in religious rituals and ceremonies (Tian *et al.* 2025)



**Fig 1: Turmeric retrieved:**  
<https://stock.adobe.com/ng/search?k=turmeric>

### 3.0 TURMERIC AS A TRADITIONAL MEDICINAL PLANT IN NIGERIA

In Nigeria, turmeric is primarily cultivated on a subsistence basis across approximately 19 states and is known by various local names, including *atale pupa* (Yoruba), *gangamau* (Hausa), *nwandumo* (Ebonyi), *ohu boboch* (Enugu, Nkanu East), *gigir* (Tiv), *magina* (Kaduna), *turi* (Niger State), and *onjonigho* (Cross River, Meo tribe) (Uchekukwu, 2020). The plant thrives under diverse tropical conditions, at altitudes from sea level up to 1500 m, on well-drained sandy or clay-loamy soils, with temperatures ranging between 20–30°C and annual rainfall above 1500 mm (Jansen,

2015). Turmeric is propagated vegetatively through rhizomes and is ready for harvest 7–10 months after planting, indicated by the drying of the foliage. Harvesting involves loosening the soil with a small digger, lifting the rhizome clumps manually, and trimming leaves to facilitate collection. Post-harvest, rhizomes are cleaned by soaking and removing roots and leaf scales, then either cured, processed, or stored for the next planting season. Storage typically involves keeping healthy rhizomes in ventilated rooms or pits layered with dry sand or sawdust to prevent dehydration, covered with wooden planks allowing aeration (FAO, 2022). Despite favorable soils and climatic conditions, Nigeria has not fully realized its turmeric production potential due to limited farmer knowledge of proper cultivation techniques, resulting in low yields per unit area (Uchekukwu, 2020; Dhatwalia, 2024). Weed infestation further reduces yield by up to 65% in root and tuber crops and accounts for 25% of total labor requirements (Maniyam and Velum, 2014). Turmeric powder is a key component of curry powder, widely used in the food industry and international markets as a functional food with health-promoting properties (Kotha, 2019). Beyond its culinary use, turmeric has applications in religious practices, cosmetics, dyes, and traditional remedies. It is valued for its antibacterial and antiseptic properties and has demonstrated potential as a natural chemo-preventive agent against cancer (Hewlings and Kalman, 2017). Its flavor and medicinal benefits also make it a common ingredient in soaps, ointments, face creams, and toothpaste (Hewlings and Kalman, 2017).

### 4.0 TURMERIC AS TRADITIONAL MEDICINAL PLANT IN ETHIOPIA

In Ethiopia, systematic commercial production of turmeric began in the 1970s, as prior to 1972, the country relied entirely on imports (Jagganath, 2020). Since 2014, turmeric cultivation and productivity have increased in southwestern regions, including the Sheka, Benchmaji, and Keffa zones, largely due to farmers shifting from ginger to turmeric following outbreaks of bacterial wilt disease in ginger crops (Girma & Muhammad, 2021). Although Ethiopian turmeric productivity remains lower than in India, the Tepi Nation Spices Research Centre has reported that the country's production and processing methods yield high-quality turmeric with excellent curcumin content (Girma & Muhammad, 2021). This quality is reflected in the growing number of countries importing Ethiopian turmeric, including India, one of the world's largest turmeric exporters, despite fluctuations in import values. In southwestern Ethiopia, turmeric is primarily cultivated by smallholder subsistence farmers,

contributing significantly to household income (Girma & Muhammad, 2021). Commercial cultivation is expanding and is expected to develop into a more prominent cash crop across other regions of Ethiopia (Girma & Muhammad, 2021).

In traditional Ethiopian medicine, turmeric is used to manage inflammation and pain, including joint discomfort, swelling, and musculoskeletal issues. These applications align with its broader ethnopharmacological reputation, as curcuminoids, especially curcumin, are widely recognized for their anti-inflammatory properties in various traditional medical systems (Ayele and Gebreyes, 2022).

### 5.0 TURMERIC AS A TRADITIONAL MEDICINAL PLANT IN PAKISTAN

Turmeric often referred to as the “spice of life” or “golden spice” (Babu *et al.*, 2015), thrives under a wide range of climatic conditions. It grows best in well-drained clay or sandy loam soils at altitudes of up to 1500 m with temperatures between 20 and 30°C and annual rainfall exceeding 1500 mm (Olojede *et al.*, 2009). Commercial cultivation typically occurs at elevations of 500–1000 m, although altitudes between 450 and 1500 m are also suitable. Temperature requirements vary throughout the growth stages: sprouting is optimal at 30–35°C, tillering at 25–30°C, rhizome initiation at 20–25°C, and rhizome enlargement at 18–20°C (Weiss, 2002). Turmeric is propagated vegetatively using rhizomes known as seed rhizomes, which also determine economic yield (Ravindran *et al.*, 2005). Approximately 2500 kg of seed rhizomes are required per hectare (Harsha *et al.*, 2018). In Pakistan, the average yield is about 16.45 tons per hectare (Saeed *et al.*, 2017). Turmeric is widely cultivated in several countries including India, China, Pakistan, Peru, Haiti, Taiwan, Bangladesh, Jamaica, Thailand, and Nigeria, with India being the largest producer in terms of both cultivated area and total output (Kumari *et al.*, 2014). Within Pakistan, turmeric cultivation is concentrated in Punjab districts such as Nankana Sahib, Sahiwal, Narowal, Gujranwala, Sialkot, Mandi Bahaudin, Okara, Lahore, and Kasur, as well as in Khyber Pakhtunkhwa (Pubbi, Bannu, and Haripur). According to data from 2021-22 Punjab produced 99,565 tons of turmeric from 3,870 hectares, while KPK and Sindh yielded 4,446 tons from 465 hectares and 23 tons from 22 hectares, respectively (Bekele, 2020; Osman *et al.*, 2023). Turmeric is extensively used in the food industry for its flavoring and coloring properties. In addition to its role as a spice, it is widely utilized in cosmetics, pharmaceuticals, and as a natural dye in the textile industry (Hossain *et al.*, 2005; Pratap *et al.*, 2015). It also holds significant commercial potential due to its

essential oils and oleoresins (Kankate *et al.*, 2018). Turmeric is a staple ingredient in curry preparations and is consumed by large populations worldwide.

Nutritionally, turmeric provides substantial energy and essential nutrients per 100 g, including carbohydrates, dietary fiber, protein, minerals, and vitamins such as vitamin C, vitamin E, and B-complex vitamins (Singh *et al.*, 2017). Its characteristic yellow-golden color is attributed to curcumin, a pigment highly valued in food products for enhancing visual appeal and consumer acceptance (Horev *et al.*, 2015; Wang *et al.*, 2009). Globally, turmeric is recognized for its broad pharmacological activities, including anti-inflammatory, antitumor, antimalarial, antidiarrheal, antipyretic, diuretic, antimicrobial, antiemetic, and antioxidant effects (Nandakumar *et al.*, 2006; Gupta *et al.*, 2012; Mariam *et al.*, 2017). In Ayurvedic medicine, turmeric is traditionally used to treat a wide range of conditions, such as constipation, digestive disorders, wounds, fever, infections, arthritis, jaundice, dysentery, trauma, skin diseases, and liver ailments (Lal, 2012).

### 6.0 TURMERIC AS A TRADITIONAL MEDICINAL PLANT IN AFGHANISTAN

Turmeric has a long history of use in traditional medical systems around the world. In Ayurveda, it is regarded as a powerful therapeutic agent with diverse health benefits including boosting general vitality, supporting digestion, reducing flatulence, eliminating intestinal parasites, regulating menstrual cycles, dissolving gallstones and easing arthritic pain. Across many South Asian culture’s turmeric is commonly used as an antiseptic for treating cuts, burns, and bruises, owing to its antibacterial and anti-inflammatory properties. It is also employed in managing gastrointestinal disorders such as irritable bowel syndrome (Sharifi-Rad *et al.*, 2020). Traditionally, turmeric is applied to wounds using a piece of burnt cloth to accelerate healing, and it is believed to cleanse the blood and help manage various skin ailments. In addition to its medicinal uses, turmeric paste has long been used for cosmetic purposes. It is traditionally applied for hair removal and used in pre-wedding rituals for brides and grooms to enhance skin radiance and protect against microbial infections (Osman *et al.*, 2023). In modern times, turmeric has been incorporated into commercial skincare products, including sunscreens and facial creams, by multinational companies. Within Ayurvedic medicine, turmeric is also prescribed for the treatment of respiratory disorders such as asthma, bronchial hypersensitivity, and allergies, as well as liver diseases, loss of appetite, rheumatism, diabetic wounds, common

colds, coughs, sinusitis, sprains, and inflammatory swelling (Araujo and Leon, 2001).

## 7.0 CONCLUSION

Medicinal plants remain vital to global healthcare, especially in areas with limited access to conventional medicine. Turmeric represents a key traditional medicinal plant supported by strong scientific evidence of therapeutic benefits. In Nigeria and Ethiopia, it supports livelihoods and traditional healthcare, though its production potential is constrained by limited agronomic knowledge. In Asia, turmeric's widespread use in Ayurveda, Traditional Medicine, and Unani systems reflects its cultural and medicinal importance. Scientific studies have confirmed its antioxidant, anti-inflammatory, antimicrobial, and anticancer properties. Enhancing farmer education, improving cultivation and processing methods, and integrating traditional knowledge with scientific research are crucial to fully harness turmeric's health and economic benefits.

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