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Original Article

Turmeric in Traditional and Modern Medicine: Comparative Analysis

Rahinj Sangram*, Rasal Vaishnavi, Madhvi Modhale, Mate Akshada, Kuthval Rupali

HSBPVT GOI faculty of pharmacy, kashti

ABSTRACT

Turmeric (Curcuma longa) has been used for centuries in traditional medicine, particularly in Ayurveda, Traditional Chinese Medicine (TCM), and Unani medicine. In recent years, modern pharmacological research has validated many of its traditional uses, leading to its incorporation into modern drug formulations, nutraceuticals, and cosmetics. This review explores the historical significance of turmeric in traditional medicine and compares it with its modern applications, focusing on pharmacological properties, clinical research, bioavailability challenges, and future prospect Turmeric (Curcuma longa) has been used for centuries in traditional medicine, particularly in Ayurveda, Traditional Chinese Medicine (TCM), and Unani medicine. In recent years, modern pharmacological research has validated many of its traditional uses, leading to its incorporation into modern drug formulations, nutraceuticals, and cosmetics. This review explores the historical significance of turmeric in traditional medicine and compares it with its modern applications, focusing on pharmacological properties, clinical research, bioavailability challenges, and future prospects.
Keywords: Turmeric, curcumin, antibacterial and anticarcinogenic

INTRODUCTION

Turmeric, a golden-yellow spice derived from the rhizome of *Curcuma longa*, has long been valued for its medicinal properties. Traditional systems of medicine have used turmeric for its anti-inflammatory, antimicrobial, and digestive benefits. In modern medicine, its active compound, curcumin, has been extensively studied for its potential in treating chronic diseases such as cancer, Alzheimer's, and arthritis. This article aims to bridge the gap between traditional knowledge and modern scientific findings.

2. Traditional Uses of Turmeric

2.1 Ayurveda

- Used as an antiseptic and wound-healing agent.
- Prescribed for digestive disorders, liver detoxification, and respiratory conditions.
- Included in herbal formulations to balance doshas (Vata, Pitta, and Kapha).

2.2 Traditional Chinese Medicine (TCM)

- Considered a "warming" herb to invigorate blood circulation.
- Used for pain relief, menstrual irregularities, and joint inflammation.
- Combined with other herbs for liver and digestive health.

2.3 Unani Medicine

- Recognized for its anti-inflammatory and detoxifying effects.
- Applied in paste form for skin diseases and wound healing.
- Used in decoctions for respiratory and gastrointestinal conditions.

3. Modern Medical Applications of Turmeric

3.1 Pharmacological Properties of Curcumin

- **Anti-inflammatory**: Inhibits NF-KB and COX-2 pathways, reducing inflammation in arthritis and autoimmune diseases.

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- **Antioxidant**: Scavenges free radicals, preventing oxidative damage in neurodegenerative diseases.
- **Antimicrobial**: Effective against bacteria, fungi, and viruses, making it useful in wound healing and oral health.
- **Anti-cancer**: Modulates multiple molecular targets, including apoptosis pathways in various cancer types.
- **Neuroprotective**: Enhances cognitive function and prevents amyloid plaque formation in Alzheimer's disease.

3.2 Clinical Research and Drug Formulations

- Studies confirm turmeric's role in managing osteoarthritis, metabolic syndrome, and depression.
- Development of curcumin-based drug formulations, including liposomes, nanoparticles, and phospholipid complexes, to enhance bioavailability.

3.3 Challenges in Modern Medicine

- Poor solubility and rapid metabolism limit curcuma's bioavailability.
- Ongoing research on nano-formulations and combination therapies to improve efficacy.

4. Comparative Analysis

Aspect	Traditional Medicine	Modern Medicine
Mechanism of Action	Holistic approach (synergistic with other herbs)	Targeted pharmacological pathways
Formulations	Decoctions, pastes, powders	Tablets, capsules, nanoparticles
Applications	General well-being, wound healing, digestion	Chronic diseases, neuroprotection, cancer therapy
Limitations	Lack of standardization	Bioavailability challenges

5. Future Prospects

- Research on synergistic combinations with other bioactive compounds.
- Development of standardized formulations with improved absorption.
- Integration of turmeric into personalized medicine and functional foods.

6.Biochemical content in dried turmeric rhizomes

- Curcumin 3.1-3.4%
- Anthocyanins 18.9-37.0 g/g
- Phenols 0.15- 0.62%
- Tannins 0.32-0.76%
- Protein content 3.6-6.8%p
- Sugars 20.5-43.4%
- Oil 3.7-5.3%
- Ash 6.9-9.8%
- Moisture 90.2-91.3%

CONCLUSION

Turmeric remains a bridge between traditional and modern medicine. While ancient systems recognized its therapeutic benefits, scientific advancements continue to unlock its full potential in treating chronic diseases. Standardized formulations and advanced drug delivery systems will ensure its wider acceptance in modern medicine.

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