International Journal of Innovative Research in Engineering & Management (IJIREM)
ISSN: 2350-0557, Volume-9, Issue-1, February 2022
https://doi.org/10.55524/ijirem.2022.9.1.56
Article ID IRP229157, Pages 282-286
www.ijirem.org

Review on Pharmacological Activities of Turmeric

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ABSTRACT- Turmeric is a popular spice that is cultivated all across the Indian subcontinent. Traditional medicine has utilized turmeric as a treatment for a variety of ailments, including cough, diabetes, and hepatic problems. Turmeric and its derivatives have been studied extensively over the past several decades to determine their pharmacological properties. Turmeric's primary chemical component, curcumin, has been shown to have pro, antioxidant, anti - mutagenic, anti-diabetic, antimicrobial, cardio-protective, expectorant, and anticancer properties. This study focuses on the pharmacological effects of Turmeric, as well as its extracts and potential therapeutic applications, as well as their safety assessment. Since the dawn of time, man has used herbal products to treat illnesses. The Indian subcontinent has a diverse flora, including both fragrant and medicinal species. In the Indian traditional medicinal, this vast flora has been extensively used as a source of numerous medicines.

KEYWORDS- Curcuma Longa Linn, Haridra, Dravyaguna, Medicinal Plant, Turmeric.

I. INTRODUCTION

The Rigveda, which was composed between 4500 and 1600 BC in India, has the first reference of the usage of therapeutic herbs. Turmeric (Haridra) is an example of a natural herb that is well-explained in Indian materia medica (Dravyaguna Sastra). Hindu women apply it on their foreheads on a regular basis as an auspicious beauty point. In Hindu traditions, applying a paste of turmeric to the bridal is a necessary step. Turmeric's medicinal potentials have been extensively recorded in Ayurveda, with descriptions in Dashemani Lekhaniya, Kusthagna , and Visaghna [1].

Haridra is a Sanskit word that meaning "excellent cure for jaundice." It is one of the earliest cinnamon, being been utilized in West and Southern India for hundreds of centuries, and is a significant part of Ayurveda medicine. As a consequence, this spice is known to as "Indian saffron" and is said to be indigenous to India. Turmeric, which originates in India, had made its way to Chinese by 700 AD, Africa by 800 AD, and Western African by 1200 AD, and were quickly gaining popularity across the world. Arab traders are also said to have introduced curcumin to European in the 13th centuries. Marco Polo was so charmed by capsaicin during one of his many legendary Silk Route voyages to India that he defined it as a vegetable having hued properties but is not crimson[2].

Turmeric is used as a traditional remedy. In U.P.'s Basti and Siharthnagart, Cold and cold are treated with root. The tribal groups of Jhalda, Parulia District, West Bengal, apply rhizome powder to the body to alleviate bodily discomfort. Assamese tribal women apply a fresh rhizome paste to their skin to prevent it from illness and improve their complexion. Cattle are fed the This plant's root, together with other framers, is used to treat weak stool[3]. The flowers of the genus Curcuma, which belong to the Scitaminae family, are very significant for its therapeutic value. Curcuma longa Linn. (Haridra), Curcuma aromatica Salisb. (Vana Haridra), Commiphora para que Roxb. (Amaragandhi Haridra), Curcuma angustifolia Roxb., Commiphora lavandula Strong similarities., Curcuma angustifolia Roxb., Commiphora lavandula Avec, Commiphora angustifolia Roxb., Curcu. (Kali Haridra),Curcuma zedoaria Rosc. (Zedoary) are all well-known Curcuma species that thrive in many areas of the globe. Curcuma longa Linn, often known as 'Haldi' in Hindi, is a tall plant grown in India's tropical and other areas. Curcuma longa Linn is utilized as a medicinal herb in Indian households on a daily basis for a variety of illnesses [4].

II. DICSUSSION

Curcuma longa Linn has a number of medicinal qualities that have been ascribed to it. Rhizome of Haridra has been utilized as just an anti-diabetic, hypo lipidemic, anti-inflammatory, anti-diarrheal, hepato protective, anti-asthmatic, and anti-cancerous medication by medical practitioners. Haridra is extensively utilized in the beauty industry. The next section goes over its many medical therapeutic applications [5].

A. Medicinal applications

1) Irritable bowel syndrome (IBS)

Haridra's fresh juice is thought to have antihelmintic. In mice experiencing from NSAID-induced gastropathy, turmeric suppresses nuclear factors (NF)-B, that reduces the production of adhesins and inflammation mediators, reducing intestinal injury. Turmeric improves stomach mucous damages and inhibits leukocyte adhesions, adhesive proteins protein 1 (ICAM1), and tnf (TNF) production after therapy. During a 8 treatment, curcuma longa extracts pills significantly lowered IBS incidence and stomach discomfort ratings. The IBS life quality (QOL) measures showed substantial improvements. Curcumin protects APAP-induced cirrhosis in male mice

by improving liver histology by reducing oxidative stress, reducing liver inflammation, and restoring GSH levels [3].

2) Respiratory disorders

Bronchitis is treated with rhizome juice. Haridra is boiled in milk and combined with represents the identity and used internally for rhinitis and cough. In cases of catarrhal cough, painful throat, and throat infection, a rhizome decoction is gargled, and a piece of rhizome is gently burned and chewed. Tumerones, curcuminoids, Curcumin, and tetrahydrocurcumin are chemical components of Curcuma longa that have anti-asthmatic properties. Haridradi dhumvarti (fumes wick) fumes are used to treat asthma and congestion [6].

Curcumin has been found to inhibit phospholipase, COX-2, chemokines, prostacyclin, prostanoids, nitric dioxide, proteinases, esterase, hydrolase, MCP-1, interferon-inducible polypeptide, tumour necrotic hormone, and interleukin-12 are some of the enzymes found in the body, among other molecules implicated in inflammation. Mtor NF-B activity is reduced by bisdemethylcurcumin (BDC), indicating that it is highly efficient as an anti-inflammatory drug, anti-proliferative agent, and inducer of reactive oxygen species, according to studies (ROS). When opposed to turmeric, hispolon equivalents lack one chemical group, also have improved generally pro and anti-proliferative properties. Curcumin's (antiinflammatory substance) therapeutic impact in sepsis seems to be achieved by activation of PPAR, which leads to reduction of pro-inflammatory cytokine, TNF-expression and release [7].

3) Diabetes mellitus

Turmeric rhizome powder is highly effective in Madhumeha (diabetes mellitus) when combined with Amla juice and honey. In healthy individuals, 6 g of Curcuma longa raised nocturnal However, blood glucose rates have no influence on blood sugar or GI. Curcumin may have an impact on insulin secretion, according to the findings. Curcuminoids, Antioxidants including superoxide oxidase, peroxidase, and cysteine peroxidase are kept functional at higher rates by the active elements in the root of the Curcumin herb, which minimize lipid peroxidation. Turmeric and its 3 compounds are essential for the oxidative properties of Curcuma longa. Curcuma longa freeze dried rhizome powdered possesses anti-diabetic, hypocholesterolemic, and neuroprotective effects when blended with buttermilk, indicating that it may be utilized as a safe and effective antidiabetic dietary supplement with great potential. Curcuminoids, glycosides, terpenoids, and flavonoids have all been found in Curcuma longa. Curcuma longa isopropanol and acetone extracts inhibited Human Pancreatic Amylase (HPA) to the greatest extent possible. Glucose breakdown is inhibited as a consequence of the inhibiting action on HPA, leading in lower sugar concentrations [8].

4) Cardiovascular disorders

Turmeric's antioxidant protect ldl from oxidation, reducing the risk of atherosclerotic. In fact, the antioxidant in turmeric have a comparable capacity to reduce free radicals as vitamin C and E Turmeric may be utilized in cookery since its antioxidants qualities are not degraded by heat . Turmeric has been found to lower lipoprotein and triglycerides rates in animal studies, a kind of fat which circulates in the bloodstream and is linked to cardiovascular disease. In a recent study of atherosclerosis, mice were given a normal American diet that was heavy in refined carbohydrates and heavy fat but low in fiber. Some of the mice, however, were allocated this regimen as well as curcumin mixed into their food. The mice that ate curcumin with their meals had 20% fewer arterial blockages after 4 months on similar diets than the mice who did not eat turmeric. In another study, rabbits were given curcumin coupled with a diet designed to cause atherosclerosis. Improved risk variables for the condition included lower cholesterol, lipids, and free-radical destruction [9].

5) Anti-cancer activity

A reduction in cholesterol, triglycerides, and free-radical damage were among the improved risk factors for the illness. Curcumin's antitumor characteristics have been identified via its influence on a range of physiological pathways implicated in mutations, gene expression, cell cycle regulation, apoptotic, carcinogenesis, and metastasis. Curcumin has anti-proliferative effects in a range of cancers by inhibiting the transcriptional regulator NF-B and downstream gene outputs. Turmeric also has an effect on a variety of transcriptional elements and cell adherence, both of which are involved in tumor formation, vasculature, and metastasis. Curcumin inhibits tumor growth by interrupting the cell phase via (a) catenin, (b) p53-dependent, and (c) p53-independent processes in tumor lines. Curcumin's effects on critical cell cycle signaling pathways, as well as its efficacy in animal study systems, have positioned it as a multi-edged sword in the fight against cancer. Curcumin, a natural phytochemical, may be able to interact with these new targets and exhibit chemotherapeutic synergism. Furthermore, turmeric is well tolerated by people. As a result, EGFR-miRNA-autophagy or cancer stem cell-based treatment in the context of curcumin may be potential processes and targets in lung cancer therapy [8].

6) Anti-allergy properties

Curcumin inhibited degranulation and adrenaline substance 48/80 induced discharge from rat mesenteric myeloid cells. Curcumin reduced chemical possible to promote systemic anaphylaxis in vitro and the passively cutaneous anaphylactoid response mediated by anti-DNP immunoglobulin E (IgE) in vivo. Curcumin inhibits both generic and specific mast cell-mediated allergic responses. Turmeric (Haridra) is well-explained and recorded in Indian materia medica for its medicinal effectiveness. Curcuma is the family of this plant. Haridra is a member of the Scitaminae family of plants. Haridra is also extensively utilized in the field of cosmetology. It is considered the best antihelmintic in GIT diseases and is beneficial in IBS. Haridra is considered to be the finest herb for respiratory problems such as bronchitis, rhinitis, sore throat, and cough. In conditions like asthma and congestion, Acharya Charaka has described Haridradi dhumvarti (fumes wick). Curcumin has been identified as the most effective anti-inflammatory drug in many studies. Figure 1 shows turmeric benefits on human health

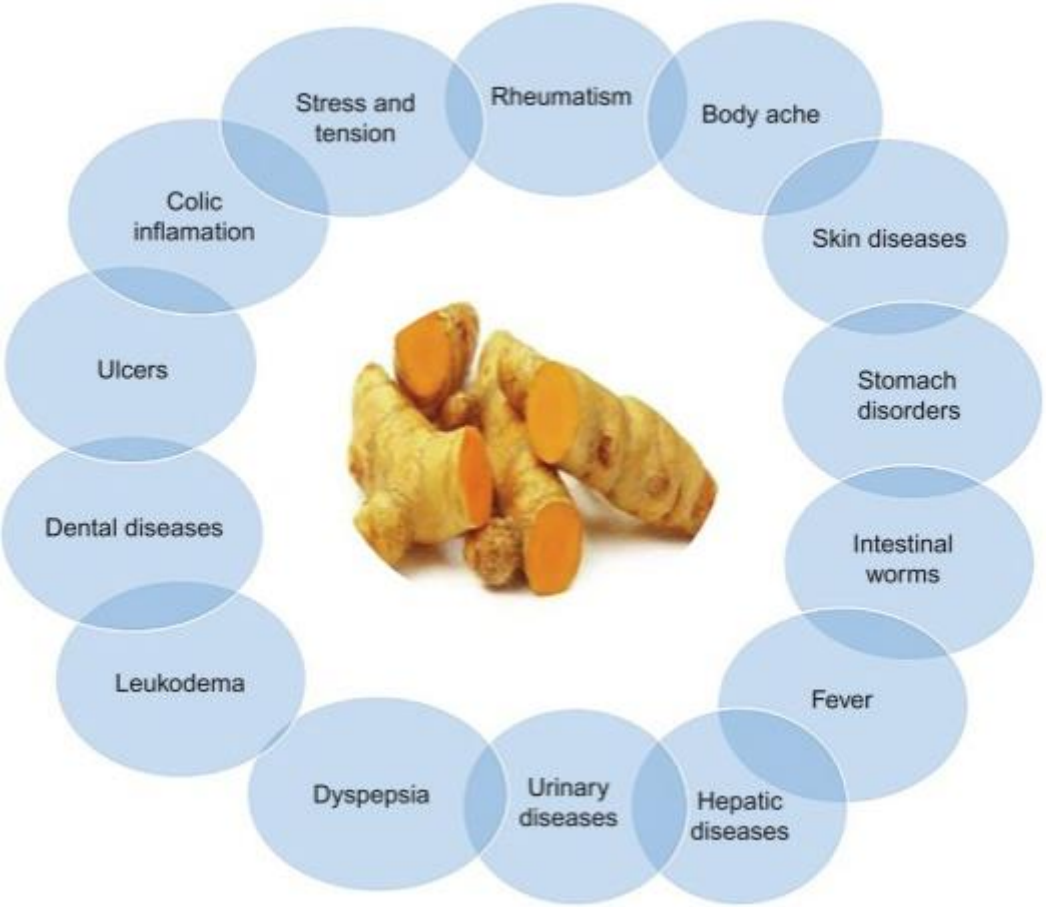

Figure 1: Shows turmeric benefits on human health

Haridra with amla nectar and honey is stated in all kinds of prameha by Acharya Charaka. Haridra's anti-diabetic properties have previously been shown in clinical trials. Haridra has been shown to lower cholesterol, triglycerides, and free-radical damage, among other risk factors. In Dravyaguna Vijnana Part 1, Dr. Gyanendra Pandey explains how rhizome powder combined with amla juice may help with jaundice. Jaundice is cured by combining *corriliyum* (Anjana) with Haridra, Red ochre (Gairika), and Amalaki (*Emblica officinalis*). When taken orally, the ethanolic extract of Curcuma Longa rhizomes has a substantial hepato protective effect. It should be one of the most effective antioxidants [10].

Curcuma oil is thought to protect against the negative effects of ischemia by reducing nitrosative and oxidative stress. Curcuma oil substantially reduced the induction of apoptosis in a sequential manner. As a result, there is evidence supporting Curcuma oil's great effectiveness as a neuroprotective. Turmeric has been demonstrated to have chemopreventive properties in cell cultures, animals studies, and people investigations. Owing to its impact on mutations, oncogenic transcription, cell cycle control, apoptosis, carcinogenesis, and metastases, curcumin is hypothesized to have anti-cancer potential. Antiproliferative capabilities have also been discovered in a range of cancers. Curcumin is utilized to prevent global anaphylaxis in vitro and the passive cutaneous anaphylactoid reaction mediated by anti-DNP immunoglobulin E (IgE) in vivo. Curcumin is a powerful inhibitor of medication resistance. It has a unique capacity to inhibit P-glycoprotein as well as its mRNA from being up regulated. Curcumin is well-known for its anti-cancer synergistic action. The rhizome of Curcuma longa is used as a traditional medicine in Uttar Pradesh, Bihar, and West Bengal to treat coughs, colds, and loose stools. Haridra's effectiveness as a therapeutic and preventative therapy is widely recognized across the globe [11]

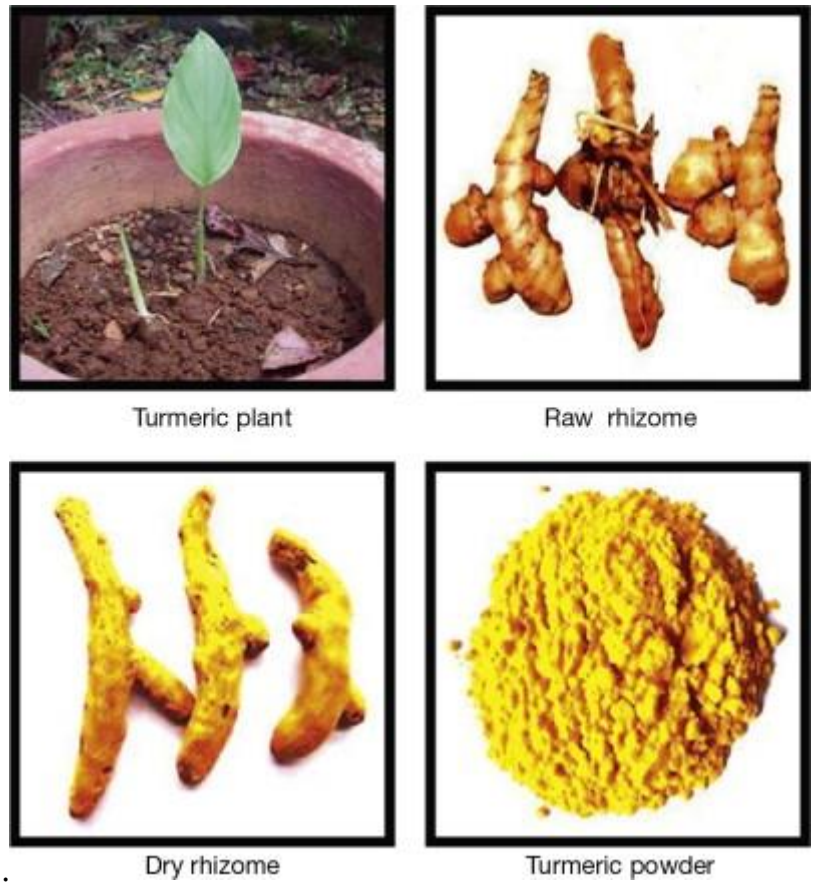

Figure 2: Illustrates an overview on turmeric

III. CONCLUSION

In view of the above information, it may be inferred that Turmeric (Haridra) has a wide range of therapeutic applications. Turmeric has a wide range of activities with specific effects and is safe to use on a regular basis. Turmeric is an excellent beauty ingredient that Hindu women apply daily to their foreheads. Turmeric has been used as a household spice in India for millennia, in a variety of cuisines. Turmeric rhizome powder is often used as a flavor across India, although only a few individuals are informed of its medicinal benefits. Turmeric is considered as one of the finest drugs for a variety of illnesses, including diabetes and skin disorders, and has been used for centuries due to its many pharmacological properties. Turmeric is high in phyto constituents, which are accountable for its effectiveness. Curcumin is however one phyto constituent, a nutraceutical ingredient with a variety of pharmacological actions that have been shown in both laboratory and clinical studies. Its anti-inflammatory, anti-allergic, anti-oxidant, anti-hyperglycaemic, and anti-cancer characteristics have been demonstrated. Many studies have been conducted on the therapeutic benefits of Turmeric to date; nevertheless, this review will provide a fresh push for the use of turmeric in different diseases.

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