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Review of Pharmacognosy, Phytochemistry, Pharmacological Studies, Medicinal Uses of Curcuma Longa Linn.

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ABSTRACT

Although Curcuma longa linn is a relatively uncommon and nearly unexplored medicine, traditional healers employ the genus Curcuma to cure a variety of diseases. The current work aims to develop the pharmocognostic standards required for assessing C. longa linn's plant material. The quiet diagnostic traits of the plant were evaluated using a variety of metrics, including morphology, microscopy, physicochemical constants, and phytochemical profiles of all the components of the plant. Significant chemical components, extractive values, physicochemical constants, and additional characteristics are also noted. Thus, the results of these further investigations are likely to increase the bioavailability, therapeutic importance and application of curcumin and make this agent a cutting edge therapeutic strategy for the prevention and treatment of a variety of chronic diseases.

KEYWORD:- Curcuma longa linn., pharmacognotic , physicochemical constants, phytochemical profile, microscopy, diseases, pharmacology.

INTRODUCTION

The Zingiberaceae family contains the plant Curcuma longa linn., also referred to as Kalihaldi. It can be found in the Indian states of Uttar Pradesh, West Bengal, Madhya Pradesh, Orissa, and Chhattisgarh. It does best in areas of damp deciduous forest[1].The plant's rhizomes are used to treat bruises and sprains as well as for making cosmetics[2]. Bronchitis, asthma, sprains, skin conditions, and inflammation brought on by injuries can all be treated with Curcuma amada Roxb.Blood purification, wound healing, and anti-inflammatory properties are all displayed by Curcuma aromatica Salisb.Bronchitis, asthma, sprains, skin conditions, and inflammation brought on by injuries can all be treated with Curcuma amada Roxb.

Blood purification, wound healing, and anti-inflammatory properties are all displayed by Curcuma aromatica Salisb. According to Curcuma zedoaria Christm., it has antimutagenic, anti-carcinogenic, and anti-inflammatory properties.Leprosy, asthma, anaemia, and leukoderma can all be treated with the help of the aphrodisiac curcuma angustifolia. Rhizome's interior is bluish black in colour and has a distinctive sweet odour. These roots are used as a rubeficient by "turkomans" (Turks) to rub their bodies after taking a Turkish bath[3]. The plant is highly regarded as lucky and is frequently used in India for a variety of magical treatments. The herb's rhizomes are frequently used by the Baiga, Sahariya, Agariya, Gond, Korku, and other tribal communities in the Madhya Pradesh state's Mandla, Balahat, Chhindwara, Anooppur, and Dindori districts to treat pneumonia, coughing, and colds in children as well as fever and asthma in adults. During the period leading up to their engagement and marriage, tribal women use the herb's powder as a facepack[4]. The plant has lately been labelled as an endangered species due to its rising demand and overexploitation without ensuring its regeneration. The plant also contains some antifungal protein that fights drug-resistant Candida albicans[5]. The preliminary mechanistic investigations on hydro alcoholic extract have demonstrated its smooth muscle relaxing action[6]. Numerous additional species of Curcuma are allegedly offered under the name C. caesia, and there are no scientific criteria available to distinguish the real plant material and guarantee its quality. The goal of the current work is to define the numerous phytochemical and pharmacognostical metrics that might be used to authenticate and monitor the quality of commercial samples of crude drugs. Additionally researched and published is the comprehensive microscopy of the plant's leaf, rhizome, root, and powder.

BASIC INFORMATION

SYNONYM: Indian Saffron, Turmeric, Haldi, Haridra

BIOLOGICAL SOURCE: Turmeric cosists of dried as well as fresh "Rhizomes" Of the plant Curcuma donga

FAMILY: Zingiberaceae

ORGANOLEPTIC CHARACTERS

COLOUR: Orange yellow to yellow ODOUR: Aromatic

TASTE: Warmly aromatic & Bitter

MAJOR CONSTITUENTS: Curcumin 50-60% Essential oil 2-7% with high content bisabolane derivatives.It also contains Desmethoxycurcumin (DMC), Bisdesmethoxycurcumin (BDMC), common phytosterols, ar-tumerone, Zingiberene fatty acids and polysaccharides.

MACROSCOPY

The plant is typically erect, growing to a height of 0.5 to 1.0 m. It is distinguished from the ground by a massive, ovoid tuberous rhizome known as the rootstock and an upright aerial shoot with leaves and flowers.

1.RHIZOMES

The rhizome is tuberous, about 2–6 cm in diameter, and has a camphoraceous, fragrant smell. The form and size are frequently vary. Sessile, lateral flattened, covered with warts, adventitious roots, and root scars, it also has longitudinal circular surface wrinkles that give the appearance of nodal and internodal zones on the rhizome. Rhizome surfaces (cork) are dark brown, bluish black, or buff in colour. They have circular patterns of scaly leaf remains, giving the appearance of growth rings. More or less sympodral branching.

FIGURE 2 [DRY RHIZOMES][7]

FIGURE 3 [FRESHLY CUT RHIZOMES][7]

2.ROOTS

The core roots are not seen as the plant spreads via rhizome, but golden brown long fibrous and tapering adventitious roots may be found all over the rhizome's surface.

FIGURE 4 [ROOTS][7]

3.LEAVES

The leaves are arranged in groups of 10–20, and each one is glabrous, wide, oblong, and lanceolate. The lamina has rich farraginous purple coloured clouds in the centre section. The petiole is ivory in colour, and when it is sheathed, the petioles create an apseudoaxis around one another. The parallel variation is a common monocot trait.

4. FLOWERS

The leaves are arranged in groups of 10–20, and each one is glabrous, wide, oblong, and lanceolate. The lamina has rich farraginous purple coloured clouds in the centre section.The petiole is ivory in colour, and when it is sheathed, the petioles create an apseudoaxis around one another. The parallel variation is a common monocot trait.

FIGURE 5 [LEAVES AND FLOWERS][7]

MICROSCOPY

1.ROOTS:-

The TS of the adventitious root is circular in outline.

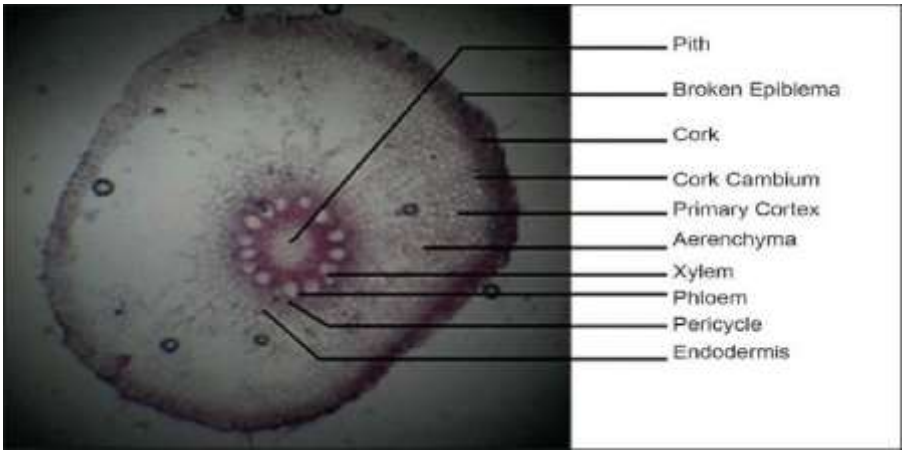

FIGURE 6 [TS OF ADVENTITIOUS ROOT][8]

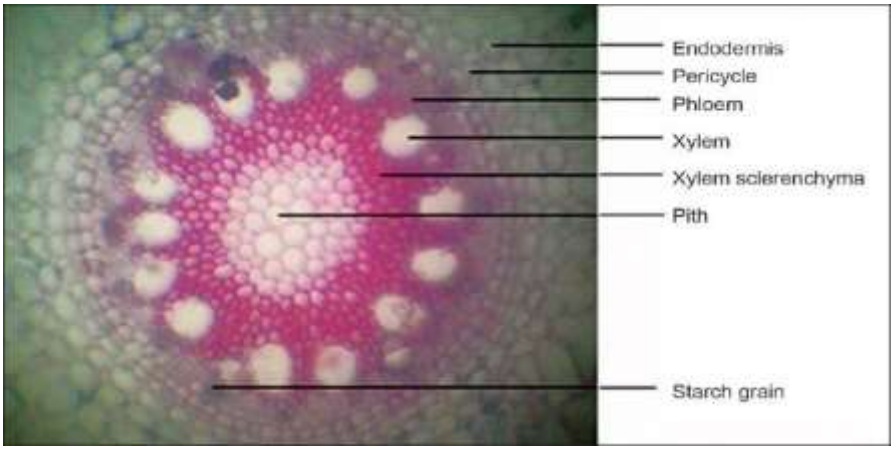

FIGURE 7 [TS OF ROOT CENTRAL PART][8]

A] EPIBLEMA

Only one layer. consists of cutinized cells with thick walls. Old specimens have ten-layered rectangular cork cells in place of the withering epiblema.

B] CORTEX

Heterogenous differentiated into -

1. OUTER CORTEX - Composed of parenchymatous tissue of secondary and primary cortex.
2. MIDDLE CORTEX- Made up of radially arranged air chambers separated by one cell thickpartition wall – the trabaculae (a character of hygrophilous plant).
3. ENDODERMIS- In the innermost layer of the cortex, the cells are rectangular and barrelshaped.

C] PERICYCLE :-Consisting of three to four layers and rectangular cells .

D] VASCULAR TISSUE :- In a radial pattern. The xylem is exarch, and the phloem patches are organised alternately.

E] PITH :-Developed parenchymatous with thick walls.

2] RHIZOMs:- TS of rhizome triangular to circular, it consists of [Figures 8 and 9].

8 9

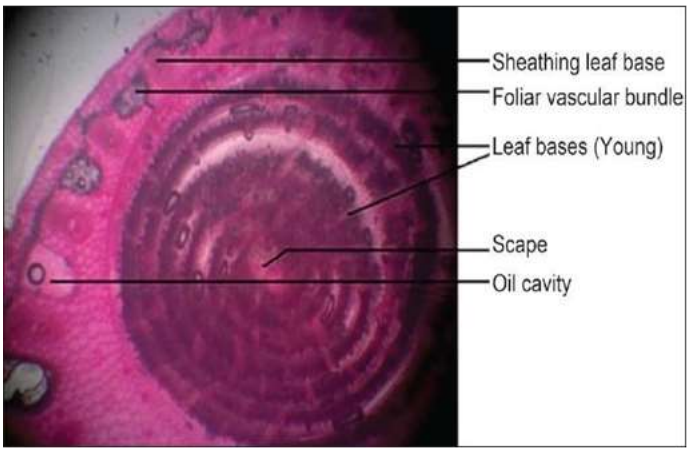

FIGURE 8 [TS OF RHIZOME EPICAL PART][8]

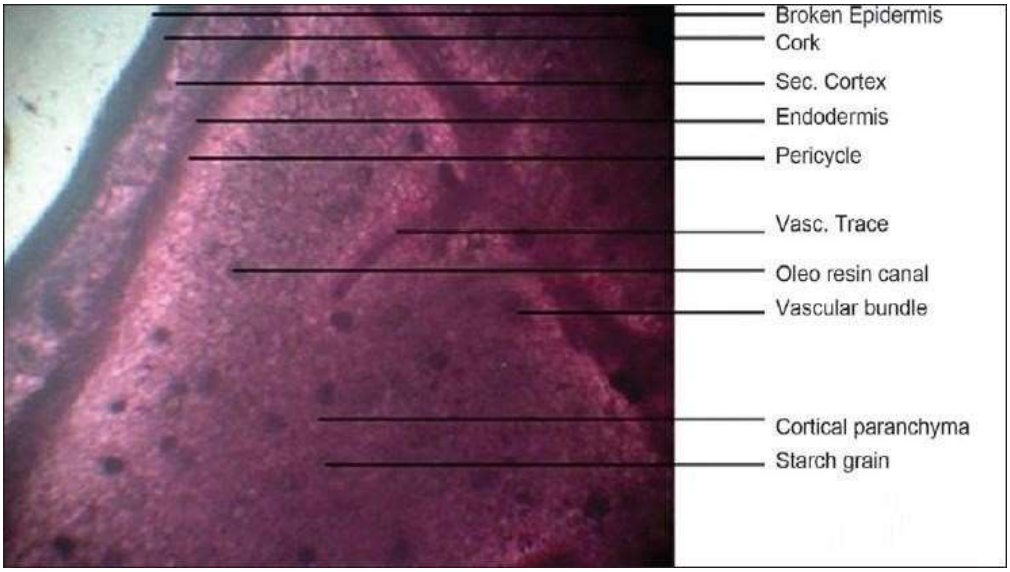

FIGURE 9 [TS OF CURCUMA CAESIA RHIZOME][8]

A] Epidermis :- A single layer made up of cells with very thick walls and a thick cuticle.

B] Cortex :- Collenchymatous cells with three to five layers and thick walls.

C] Endodermis :- Inadequately developed.

D] Pericycle :- It has well-defined cells that are radially and densely arranged.

E] PITH :- It is big parenchymatous, with many cells packed with either starch grains or sphaeraphides. A number of vascular traces that cross the pith may be leaf traces.

F] Vascular tissue :- Xylem is made up of vessels and xylem parenchyma, and vascular bundles are conjoint and dispersed. tubes made of sieves make up phloem. Pheromone parenchyma.

3] LEAFS :-

The isobilateral leaf of plant shows [Figures 10 and 11].

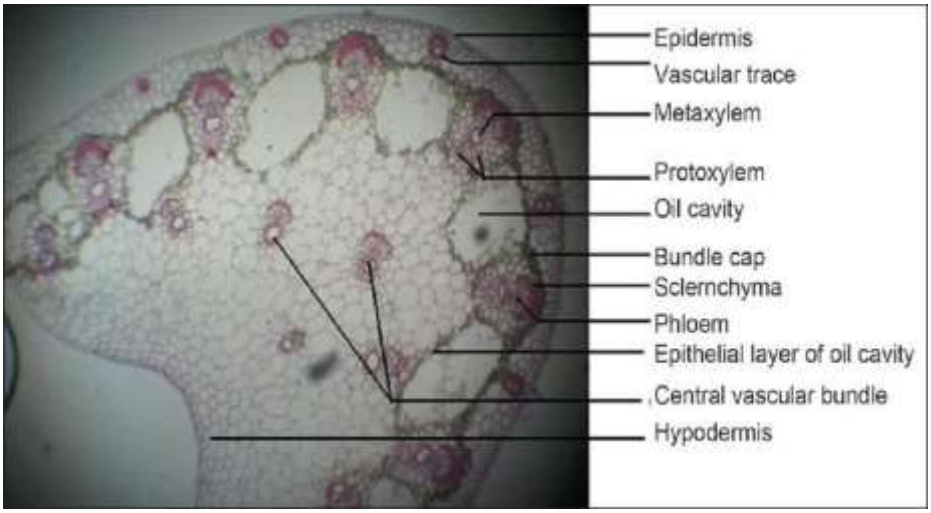

FIGURE 10 [TS OF CENTRAL PART OF LEAF][8]

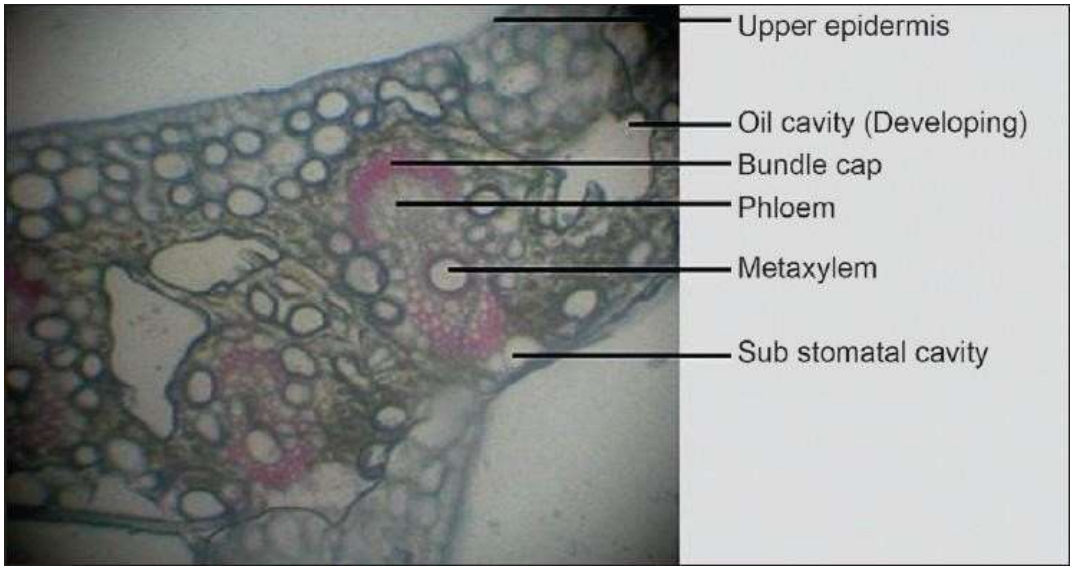

FIGURE 11 [TS OF LEAF LAMINA][8]

A] EPIDERMIS :-

It is solitary and single layered, coated with cuticle, and punctured by stomata on both the upper and lower epidermis.

B] MESOPHYLL :-

Spongy parenchyma with a palisade They are jumbled together in the mesophyll and are not well delineated; the whole mesophyll is chlorophyllens with sporadic oil cavities. Epithelial cells make form the well defined wall of oilcavities.

C] VASCULAR BUNDLES :- They are intermingled with oil cavities, and each bundle has an arch of sclerenchyma covering the xylem.

PHYTOCHEMICAL STUDIES

Figure 12 shows the results of the determination of several physicochemical constants, including moisture content, ash value, acid-insoluble ash, LOD, and water and alcohol soluble extractives. The results of calculating the percentages of subsequent Soxhlet solvent extractives are shown. Alkaloids, steroids, phenolics, and tannins were discovered in preliminary phytochemical tests to be the main components of the successive solvent extraction.

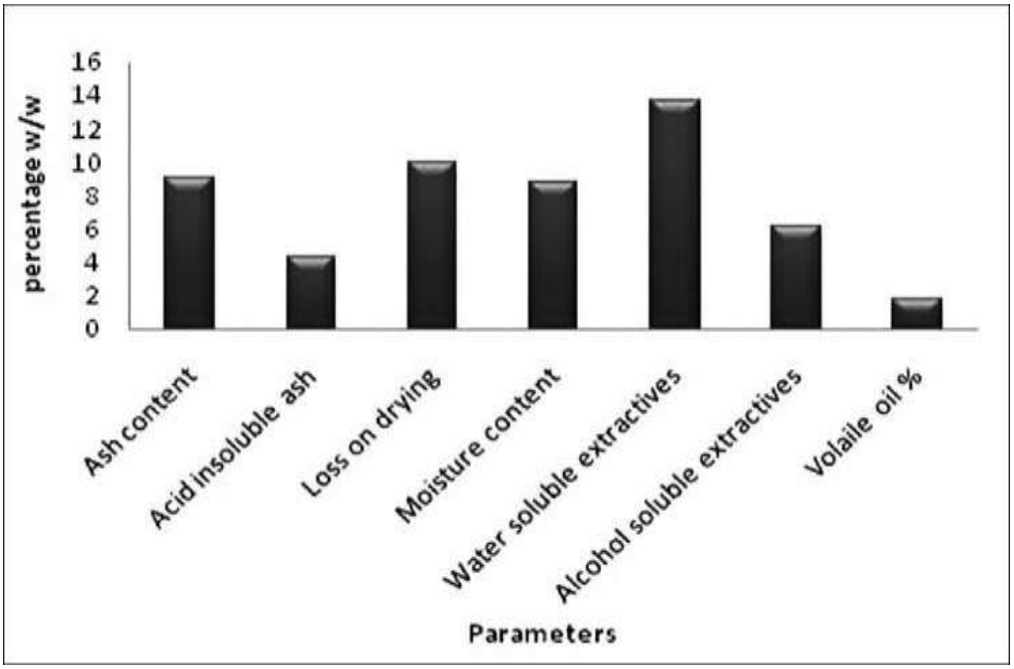

FIGURE 12 [PHYSICOCHEMICAL CONSTANT OF CURCUMA] [8]

SCHEMATIC REPRESENTATION OF PHARMACOLOGICAL ACTIVITIES OF CURCUMA (MECHANICAL USES):

1] CURCUMIN FOR CANCER

Cancer is one of the prime health concerns today, affecting people of all ages worldwide. The first clinical trial on curcumin was done by Kuttan and colleagues in 1987 by enrolling 62 patients with external cancerous lesions to investigate its potential against cancer. An ethanolic extract of turmeric and an ointment of curcumin caused significant symptomatic relief in these patients along with a reduction in itching and smell. In 70% of the patients, dry lesions were observed and in a few cases, a reduction in lesion size and pain was observed[9]. A] **Cervical cancer -** Cervical cancer is the second most common form of malignancy in women worldwide. Curcumin exhibits potent effects against this cancer in vitro, in vivo and in clinical settings. From an initial study, a dose of 500–12 000 mg·day_1 of curcumin was found to be safe,well tolerated and have chemo preventive properties against cervical cancer[10].

B]**Colon cancer -** Colon cancer ranks third among the most commonly occurring cancers in the world. Despite significant advances in cancer therapy, mortality from colon cancer persists at the same level, highlighting the necessity of improved therapies (Nautiyal et al., 2011). The efficacy of oral curcumin (2 g or 4 g daily for 30 days) in the prevention of colorectal neoplasia was evaluated in a nonrandomized, open-label clinical trial enrolling 44 patients. The results showed a marked reduction in ACFnumber with 4 g dose of curcumin, which was possibly associated with its increased bioavailabity (fivefold) in plasma[11].

C] **Head and neck cancer-** Curcumin has also been found to have potential against head and neck cancer, which generally arises in the paranasal sinuses, nasal cavity, oral cavity, pharynx and larynx. the detection of the effect of curcumin in head and neck cancer as curcumin inhibited IKKβ kinase activity in the saliva of HNSCC patients, and this effect was strongly correlated with the reduced expression of a number of cytokines[12]. D] **Pancreatic cancer-** It is one of the most lethal human cancers and the conventional treatment approaches have had little impact on the course of this aggressive neoplasm (Li et al., 2004). However, new therapeutic strategies based on curcumin seem to hold great promise. Studies have shown that oral curcumin is safe and well tolerated, and despite its limited absorption has clinical biological effects in pancreatic cancer patients [13].

2] CURCUMIN FOR CARDIOVASCULAR DISEASES

Cardiovascular diseases, which include acute coronary syndrome, acute myocardial infarction and dyslipidaemia, are the number one cause of mortality worldwide. There are many drugs approved for the treatment of this disease but they are not devoid of severe side effects. Therefore, the effect of curcumin has been studied in patients with this disease. A] **Acute coronary syndrome-** Acute coronary syndrome (ACS) is used to define any group of clinical symptoms compatible with acute myocardial ischaemia. The findings revealed that curcumin effectively reduced the total cholesterol and low density lipoprotein cholesterol levels in the patients at low doses when compared with the higher doses. The findings revealed that curcumin effectively reduced the total cholesterol and low density lipoprotein cholesterol levels in the patients at low doses when compared higher doses[14]. B]**Acute Myocardial Infraction -** Curcuminoid was found to reduce the myocardial infarction associated with coronary artery bypass grafting (CABG) significantly. Wongcharoen et al. evaluated the effects of curcuminoids on the frequency of acute myocardial infarction after CABG[15].

C]**Dyslipidaemia-**Dyslipidaemia is a well-established modifiable cardiovascular risk factor. Treatment of this disease is usual for the prevention of cardiovascular diseases. Supplementation of curcuminoid resulted in a decrease in the concentrations of serum triglycerides without causing any marked impact on the lipid profile, body mass index and body fat[16].

3] CURCUMIN FOR INFLAMMATORY DISEASES

The effect of curcumin on different inflammatory diseases in humans, such as bronchial asthma, uveitis, periodontitis and inflammatory bowel diseases, has also been studied in detail.

A] **Bronchial Asthma -** Curcumin has also found to be highly effective against bronchial asthma. Administration of curcumin capsules improved the mean forced expiratory volume 1 s (FEV1) values, which signifies an improvement in the airway obstruction[17].

B]**Chronic Anterior Uveitis -** Uveitis is a major cause of vision loss worldwide. Chronic anterior uveitis (CAU) includes a heterogeneous group of diseases, of which some are idiopathic in origin . The oral administration of curcumin to CAU patients improved their health and a follow-up after 3 years indicated a 55% recurrence rate[18].

C] **Inflammatory Bowel Disease -** Inflammatory bowel disease (IBD), which includes Crohn's disease and ulcerative colitis (UC), is a type of chronic and relapsing disorder characterized by inflammation of the gastrointestinal tract. Considering the well-established anti-inflammatory potential of curcumin, a pilot study was conducted to obtain a probable dosage of curcumin for children suffering from IBD[19].

D] **Peptic Ulcer -** Peptic ulcer is a multifactorial disease, the complications of which remain a major challenge . There is much evidence suggesting that curcumin could play a pivotal role in the management of such ulcers.

E] **Rheumatoid Arthritis -** Curcumin has displayed potent antiarthritic effects. A pilot clinical study investigated the safety and efficacy of curcumin in active rheumatoid arthritis patients and it showed an improvement in overall DAS (disease activity score) and ACR

(American College of Rheumatology) scores.

4] CURCUMIN FOR NEUROLOGICAL DISEASES

The effect of curcumin was also studied in neurological disorders such as Alzheimer's disease and depression in humans.

A] **Alzheimer Disease -** Alzheimer's disease is a progressive neurodegenerative disorder, usually affecting people older than 65 years. The curcumin treatment resulted in elevated levels of vitamin E without causing any adverse reactions through the antioxidant effects of curcuma[20].

B] **Depression -**Depression is a disorder in which many dysregulated pathways have been identified. As curcumin is known to target many pathways, its effect on depression has also been studied and it was observed that treatment with curcumin altered the biomarkers of depression and also improved the mood of the patients[21].

5] CURCUMIN FOR SKIN DISEASES -

Curcumin has also been shown to be very effective against various skin diseases such as psoriasis and vitiligo.

A] **Dermatitis-** A randomized, double-blind, placebo-controlled clinical trial has been

conducted to investigate curcumin's potential at reducing the severity of radiation-associated dermatitis in 30 breast cancer patients[22]. B] **Vitiligo-** Vitiligo is a chronic skin condition characterized by loss of pigmentation of the skin. The beneficial effect of curcumin on vitiligo has been demonstrated by Asawanonda and

Klahan (2010).

6] CURCUMIN FOR INFECTIOUS DISEASES

Curcumin has also been shown to be effective in the treatment of various infectious diseases in humans.

A] **Acquired Immunodeficiency Syndrome -**Acquired immunodeficiency syndrome (AIDS) is caused by the human immunodeficiency virus (HIV), which interferes with and weakens the immune system. A clinical trial from New England evaluated the effectiveness of curcumin as an antiviral agent in 40 AIDS patients [23].

B] **Curcumin For Liver Diseases -** Curcumin exhibits effects against different liver diseases such as hepatitis B, hepatitis C, alcoholic liver disease, non-alcoholic fatty liver disease, drug-induced hepatotoxicity, liver cancer, biliary cirrhosis and primary sclerosing cholangitis[24]

SIDE EFFECT

- Nausea
- Constipation
- Skin rash
- Allergic reaction
- Low iron absorption
- Worsen kidney stones
- Anticoagulant
- Defective blood sugar levels [25]

DRUG INTERACTIONS

The following section provides advice and guidance on actions to take for medicines known to interact with turmeric-

A] ANTICOAGULANTS OR ANTIPLATELETS- The risk of bleeding might be increased because turmeric may interfere with clotting by decreasing platelet aggregation .Use caution when turmeric or curcumin are taken with medicines or supplements that have anticoagulant or antiplatelet (blood thinning) effects.

1] Warfarin- Monitor closely if warfarin and curcumin are taken together, especially as warfarin has a narrow therapeutic index. Raised international ratio to level associated with a serious risk of bleeding.

2] Clopidogrel- In an animal study, the amount of clopidogrel in the bloodstream was significantly increased when curcumin was taken at a high dose (100 mg/kg) for seven days.

3] Herbal supplement –

- Clove

- Danshen
- Garlic
- Ginkgo
- Ginger
- Panax ginseng
- Willow

B] ANTIDIABETIC DRUG - Turmeric or curcumin might reduce blood glucose and increase the risk of hypoglycaemia (low blood sugar).

1] Glyburide- In a study in eight people with type 2 diabetes who were taking glyburide 5 mg, curcumin was added in for 10 days. On day 11, their blood glucose levels remained significantly lower for 24 hours than they had been before the curcumin was started.

2] Herbal supplement –

Supplements that could reduce blood glucose levels include:

- Eleuthero (Siberian ginseng)
- Fenugreek
- Garlic
- Guar gum
- Horse chestnut
- Panax ginseng

C] CHEMOTHERAPY - Taking turmeric or curcumin while you are undergoing cancer chemotherapy treatment is not recommended. Curcumin might alter the effect of chemotherapy medicines. Ex- Doxorubicin, Cyclophosphamide, Paclitaxel, Docetaxel[26]

LITERATURE REVIEW

• Kritikar, K.R. and Basu, B.D. (1987)

Plants from the start are being used for the welfare of human and animals. About 25,000 biological active compounds are reported by different scientists. Plants itself are a complete treatment bioagent. People are still using plants and their decoction for different diseases. Saussurea lappa Clarke is the member of family Compositae. This plant is famous due to its high medical importance. The plant is commonly named as Kuth root or costus and has wide use for anticancer, antiulcer, hepatoprotective, anti-viral, anticonvulsant, antiarthritic, activities. Biologically active substance of in this plant is lactone cynaropicrin, dehydrocostus, germacrene,lappadilactone. This plant can be used to extract such bioactive compounds which can help the scientist to discover new and potential drugs. Due to such chemical composition and medicinal importance this review has been prepared for the awareness of the people to conserve their medicinal plants which can be used for potential drug discovery[3].

• K.R.Khandelwar , Nirali Prakashan (2002)

The present study was undertaken to evaluate in-vitro antioxidant and anthelmintic activity of ethanolic and aqueous extract from whole plant Sida cordifolia Linn (Malvaceae). The antioxidant activities are evaluated by various antioxidant assays like α, α-Diphenyl-β-picrylhydrazyl (DPPH) free radical scavenging, total reducing power, nitric oxide scavenging and hydrogen peroxide scavenging. The various antioxidant activities were compared to standard antioxidants such as ascorbic acid. The antioxidant activity of ethanolic extract is almost quantitatively equivalent to that of the standards used, ascorbic acid. Various concentrations of ethanol and aqueous extract (10, 20, 30, 40 mg/ml) of whole plant of Sida cordifolia Linn were tested in the bioassay, which involve determination of time of paralysis of the worms. The results from the above studies indicate that plant Sida cordifolia Linn. possesses potent antioxidant and anthelmintic activity[7].

• VERTIKA Khare, Shikar Verma (2012)

Background: Urtica dioica L. is a common Himalayan species which produces allergenic substances causing oedema and inflammation in humans. The leaves and roots both are used internally as a blood purifier and diuretic and an infusion of the plant is used for nasal and menstrual haemorrhage, diabetes, rheumatism, eczema, anaemia, hair loss, as an expectorant and antidiarrhoeal. Present study includes pharmacognostic evaluation, antioxidant activity. Methods: Pharmacognostic evaluation of aerial part of U. dioica has been performed as per Indian pharmacopoeia.Ferulic acid, a potential phenolic antioxidant present in this species, has been studied through HPTLC. Results: U. dioica hydro-alcoholic extract shows positive results for antioxidant activity with IC50 value of 88.33 ± 2.88 µg/ml. Standard ascorbic acid showed IC50 value of 2.8 ± 0.62 µg/ml. Ferulic acid was identified at Rf 0.61 ± 0.01 and quantified to 0.73% in this species through CAMAG HPTLC analysis. Conclusion: The pharmacognostical parameters reported can be considered as quality standards of U. dioica in herbal industry[8].

• Ajay Gautam et al(2010)

Pharmacognostic standardizations of powdered and anatomical sections of the Toona ciliata bark was carried out to determine its macro- and microscopical characters and also some of its quantitative standards. Externally bark are Grey to reddish-brown in colour when it is dry, 200 mm in length, 20 to 60 mm in width and 2 to 3 mm in thickness outer surface brown coloured, strong odour, bitter taste, rough and hard, double quill and curved curvature. The transverse section (T. S.) revealed the presences of periderm, cortex, Sclerides, mednllary rays and phloem fiber. Physico-chemical evaluation includes ash values, extractive values and moisture content. These findings will be useful towards establishing pharmacognostic standards on identification, purity, quality and classification of the plant, which is gaining relevance in plant drug research[11].

• J Adv Pharm Technol Res. 2011 Jan-Mar

In ethno medicinal practices, the traditional healers use the genus Curcuma for the treatment of various ailments but Curcuma caesia Roxb. is a very less known and almost untouched drug. The present work attempts to establish the necessary pharmocognostic standards for evaluating the plant material of C. caesia Roxb. Various parameters, such as morphology, microscopy, physicochemical constants, and phytochemical profiles of the entire parts of the plant were studied and the salient diagnostic features are documented. Major chemical constituents, extractive values, physicochemical constants, and other features are also been record[13].

• S.G. Perry, R. Amos and P.I. Brewer (1969)

The discovery of thin-layer chromatography (TLC) is attributed to Izmailov and Shraiber(¹), who, in 1938, separated plant extracts by spotting them onto adsorbent layers produced by coating microscope slides with a slurry of the adsorbent with water and allowing to dry. Separation of the mixture into concentric zones was achieved by applying drops of certain solvents to the center of the spot[14].

• Li D, Xie K, Wolff R, Abbruzzese JL. (2004 March)

Pancreatic cancer remains a major unsolved health problem, with conventional cancer treatments having little impact on disease course. Almost all patients who have pancreatic cancer develop metastases and die. The main risk factors are smoking, age, and some genetic disorders, although the primary causes are poorly understood. Advances in molecular biology have, however, greatly improved understanding of the pathogenesis of pancreatic cancer. Many patients have mutations of the K-ras oncogene, and various tumour-suppressor genes are also inactivated. Growth factors also play an important part. However, disease prognosis is extremely poor. Around 15-20% of patients have resectable disease, but only around 20% of these survive to 5 years. For locally advanced, unresectable, and metastatic disease, treatment is palliative, although fluorouracil chemoradiation for locally advanced and gemcitabine chemotherapy for metastatic disease can provide palliative benefits. Despite pancreatic cancer's resistance to currently available treatments, new methods are being investigated.However, new therapeutic strategies based on the molecular biology of pancreatic cancer seem to hold the greatest promise[19].

• Gupta SC, Tyagi AK, Deshmukh-Taskar P, Hinojosa M, Prasad S, Aggarwal BB.(June 2014)

Human tumor necrosis factor (TNF), first isolated by our group as an anticancer agent, has been now shown to be a primary mediator of inflammation. Till today 19 different members of the TNF superfamily which interact with 29 different receptors, have been identified. Most members of this family exhibit pro-inflammatory activities, in part through the activation of the transcription factor, nuclear factor-kappaB (NF-κB)..In this review, we describe various plant-derived polyphenols that can suppress TNF-α activated inflammatory pathways both in vitro and in vivo. These polyphenols include curcumin, resveratrol, genistein, epigallocatechin gallate, flavopiridol, silymarin, emodin, morin isoliquiritigenin, naringenin, ellagic acid, apigenin, kaempferol, catechins, myricetin, xanthohumol, fisetin, vitexin, escin, mangostin and others. Thus these polyphenols are likely to have potential against various pro-inflammatory diseases[28].

• Lopresti AL, Maes M, Meddens MJ, Maker GL, Arnoldussen E, Drummond PD(Jan 2015)

A recent randomised, double-blind, placebo controlled study conducted by our research group, provided partial support for the efficacy of supplementation with a patented curcumin extract (500 mg, twice daily) for 8 weeks in reducing depressive symptoms in people with major depressive disorder. In the present paper, a secondary, exploratory analysis of salivary, urinary and blood biomarkers collected during this study was conducted to identify potential antidepressant mechanisms of action of curcumin..Plasma concentrations of leptin and endothelin-1 seem to have particular relevance to treatment outcome. Further investigations using larger samples sizes are required to elucidate these findings, as the multiple statistical comparisons completed in this study increased the risk of type I errors[29].

• Kunnumakkara AB, Bordoloi D, Padmavathi G, Monisha J, Roy NK, Prasad S, Aggarwal BB.(June 2017)

Curcumin, a yellow pigment in the Indian spice Turmeric (Curcuma longa), which is chemically known as diferuloylmethane, was first isolated exactly two centuries ago in 1815 by two German Scientists, Vogel and Pelletier.The Lancet in 1937.The suppression of numerous cell signalling pathways including NF-κB, STAT3, Nrf2, ROS and COX2. N To date, over 100 different clinical trials have been completed with curcumin, which clearly show its safety, tolerability and its effectiveness against various chronic diseases in humans. However, more clinical trials in different populations are necessary to prove its potential against different chronic diseases in humans. This review's primary focus is on lessons learnt about curcumin from clinical trials[31].

AIM:- Formulation and evaluation of antioxidant and beautifying cream from Curcuma Longa Linn.

AIM AND OBJECTIVE

The aim of study is to develop and evaluate antioxidant and beautifying cream which prevent aging of skin and provide barrier to different skin diseases by using Turmeric(Curcuma Longa Linn). In relation to proposed project our main objective are:-

1. Procurement and standardization of plant material.
2. To do literature review on Curcuma Longa Linn.
3. Formulation of antioxidant and beautifying cream by using Curcuma Longa Linn.
4. Evaluation of cream.

WORK PLAN SCHEDULE

The work plan schedule divided into three parts at mentioned below:-

1) **Part A :-** SELECTION OF TOPIC

The topic is selected according to need and importance of current environmental conditions and skin diseases.

2) **Part B :-** LITERATURE SURVEY

Extensive literature survey was carried out to study and understand the project topic. The related articles to this study are captured and noted.

3) **Part C :-** Formulation and Evaluation of antioxidant and beautifying cream will be done.

CONCLUSION

Although Curcuma longa linn is a relatively uncommon and nearly unexplored medicine, traditional healers employ the genus Curcuma to cure a variety of diseases. There is an abundance of preclinical and clinical evidence indicating that curcumin has potential as a therapy for a wide variety of chronic diseases including cancer, cardiovascular, inflammatory, metabolic, neurological and skin diseases, and various infectious diseases. Therefore, more detailed and well-controlled clinical trials are inevitable to evaluate the efficacy of these new formulations as compared with the parental compound. Thus, the results of these further investigations are likely to increase the bioavailability, therapeutic importance and application of curcumin and make this agent a cutting edge therapeutic strategy for the prevention and treatment of a variety of chronic diseases.

REFERENCE

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