AN OVERVIEW OF BENEFITS OF COMMIPHORAMUKUL: THE INDIAN BDELLIUM PLANT.

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ABSTRACT:
Nature is the biggest source of medicines, whole over the world. A number of materials from plants, animals and minerals have been identified and used successfully for the treatment of various human ailments. Commiphora Mukul is a significant antiquated restorative plant of the Burseraceae family. Gum guggul (oleo-gum-resin) is obtained by making cut in bark of Commiphoramukul having a place with the family Burseraceae and is found widely in the dry districts of the Indian subcontinent. Guggul contain flavonoids, phytosterols and terpenes which are responsible for number of biological activities like anti-inflammatory, antiobesity, antineoplastic and antidiabetic. This review is mainly to update information regarding its pharmacological benefits of CommiphoraMukul.

KEYWORDS: Commiphoramukul, guggulsterone, anti-inflammatory activity, flavonoids, Obesity etc.

INTRODUCTION:
Commiphoramukul is also known as guggul tree and is largely located in drought areas of Pakistan, Bangladesh and India. The guggul tree is 4-6 feet tall, prickly, and free from foliage in the greater part of the year with debris hued papery bark that pieces off into papery drops, uncovering a green bark underneath creating fragrant gums of financial, restorative and social worth. It has additionally been portrayed as a bush. Branches are spirally rising, spinescent and youthful parts are glandular and pubescent. The leaves are for the most part compound, having only some species possessing simple leaves. Compound leaves are 1-3 foliate though pamphlets are sessile to sub-sessile, terminal ones the biggest, rhomboid to praise fit as a fiddle, unpredictably toothed edge, exchange phyllotaxy, horizontal handouts when present just not exactly a large portion of the size of the terminal ones. Glandular hairs are available on calyx,
shaping tube shaped top. Length of petals is nearly four to five times of sepal. Stamens are 8-10, with altering long and short. Stigmas are 8-10, unnoticeably bilobed. Fruits of Commiphora significantly improve the distinguishing proof of the species [1,2].

![Figure1: Commiphoramukul plant with leaves and fruits](image)

**PHARMACOLOGICAL BENEFITS:**

Guggul signifies "averts ailment", an Indian conventional Ayurvedic prescription used to treat elevated cholesterol. Customary utilizations are anthelmintic, thyroid stimulant, antiseptic, anti-inflammatory, depurative, carminative, aperitif, astringent, emmenagogue, hypoglycaemic alterative, antispasmodic, vulnerary, stimulant, sedative, liver tonic, enrich blood, demulcent, detergent, expectorant, stomachic, diuretic, lithonatriptic, diaphoretic. It is utilized as hunger energizer, aphrodisiac, improves the overall condition; decrease fever and discharge from unhealthy surfaces because of its antisuppulsive properties. The gum sap is utilized for indolent ulcers in cream dose form and in caries of the teeth, frail and springy gums, pyorrhela alveolaries, incessant pharyngitis and tonsilitis and ulcerated throat as a rinse [3]. Inward breath of vapor from consuming gum is suggested in chronic bronchitis, hay fever, nasal catarrh, phthisis and laryngitis. Gum smoke is mosquito repellent. Guggul is one of comprises of a few indigenous medications. Guggulipid is helpful in coronary illness, gout, and spondylitis [3,4].

**BIOACTIVE CONSTITUENTS:**

Commiphoramukul contains longchain aliphatic tetrols, starches, diterpenoids, steroids, triterpenoids, aliphatic esters, lignans, ferulates, and an assortment of inorganic particles other than minor measures of sesamin and some unidentified constituents. It is a convoluted blend of gum, terpenes, minerals, sterols (Guggulsterol I to V), essential oils, sterones (dehydroguggulsterol-M and M, Z, E -guggulsterol) flavanones, lignans, ferrulates. The ethyl acetic acid derivation dissolvable part otherwise called guggulipid, comprises of different bioactive segments like triterpenoids, diterpenoids, lignans, fatty tetrol esters and steroids [2,4].
Various investigations have been carried out to set up the pharmacological values of the Commiphoramukul. These examinations clearly demonstrate the scientific values of the said plant. In present investigation on Commiphoramukul, anticancer research was done where Myrrhanone C, a bicyclic tri-terpenoid obtained from gum resin, synthetically conformed to obtain novel pyrimidine hybrids assessed for their antineoplastic potential against a 6 malignancy cell lines in particular Hela (cervical), A-549(lungs), ACHN (renal), MCF-7(breast), B-16 (mouse melanoma) and COLO-205(colon) through MTT test. Results indicated that synthesized compounds proved anticancer effect against all the malignant growth cell lines tried [4].

In an insightful investigation crystalline steroid was isolated from the petroleum ether extract and administered in Freund's adjuvant treated rats for anti inflammatory effect. It repressed the full
advancement of the primary injuries in adjuvant joint pain and furthermore decreased the secondary injuries [5].

In another investigation the Anti-inflammatory agents, for example ibuprofen, phenylbutazone and gum-guggual from Commiphoramukkul were administered orally and these three medications diminished the swelling of joint over the span of medication treatment. These outcomes show the fruitful role of gum-guggul in experimentally induced joint inflammation [6]. Several investigations have indicated that guggulsterone activates the thyroid organ. Tripathi et al. demonstrated that guggulsterone (10 mg/kg) expanded thyroid capacity in albino rats. Moreover in this study, guggulsterone showed rise in iodine absorption by the thyroid and upgraded the activities of thyroid protease and peroxidase along with oxygen utilization. In another examination, a similar group indicated that guggulsterone (10 mg/kg) reestablished thyroid function in hypothyroid rodents [7].

The lipid lowering down impact of guggulu with uncommon reference to atherosclerosis and weight was directed by Satyavati, 1988 and hypolipidemic action was appeared in animals just as in patients of obesity and increased cholesterol level. It was exhibited for the absolute first time that crude guggulu couldn't just lower essentially the serum cholesterol in hypercholesterolemic rabbits yet in addition ensured these animals against cholesterol-induced atherosclerosis at the fatty streak stage [8].

In another investigation by Deng, 2007 and Singh et al; 1990 analyzed the impact of guggulsterone on cholesterol and fatty substance levels (triglycerides) in rats [9]. Chander et al; 2003 analyzed the impact of guggulsterone on serum lipid levels in cholesterol and triton fed rats, altogether diminished serum lipid levels [10]. With the end goal of understanding the method of activity of lipid bringing down medications, the impact of guggulsterone on lipid and lipoprotein digestion was explored by Masten, 2005 in cholesterol and triton instigated hyperlipidemic on rats. Rats administered with guggulipid had altogether diminished serum cholesterol, fatty oil, and phospholipids levels and atherogenic index [11]. Free unsaturated fat levels in serum, liver and heart were additionally essentially diminished, where aslipolytic action was expanded in liver and heart [12].

Guggulipid has been accounted for to be viable in the treatment of nodulocystic skin inflammation. In a study conducted, 20 patients with nodulocystic skin disease were arbitrarily apportioned in 2 groups. Patients in one of the groups administered with antibiotic medication (tetracycline 500mg) and other group got guggulipid (proportionate to 25 mg guggulsterone) two times a day for 3 months; the two medicines created a dynamic decrease in injuries in most of patients. Guggulipid was as successful as antibiotic medication in the treatment of nodulocystic skin disease. An intriguing perception was that, in patients with oily faces the skin break out reacted better to guggulipid [13].

In furthermore examinations, antioxidant activity of ethyl acetic acid derivation concentrate of Commiphoramukul was explored for total antioxidant activity. The ethyl acetic acid derivation concentrate of Commiphoramukul showed great good reducing power anti-lipid peroxidation activities controlled by thiocyanate technique. Commiphoramukul extricate increase the absorbance of the blend showed stronger reducing power [14].

Moreover, in another investigation Commiphoramuku (50% aqueous methanolic extract) was found to show anti-inflammatory effect on adjuvant-induced air pouch granuloma in mice. The methanolic separate repressed nitric oxide creation in lipopolysaccharide actuated mouse peritoneal macrophages [15].
In another examination it was discovered that sesquiterpenoid compounds, essential oil, and chloroform extract recently segregated from the oleo-gum-resin of Commiphoramukul, viably restrained the growth of Gram (+) and Gram (-), microscopic organisms, showing activity similar to the effect of standard compound kanamycin [16].

In the current investigation, liver toxicity was prompted in laboratory animals (rats) by augmenting them with equal portion (1:1) of liquid paraffin and carbon tetrachloride. Present study reveals that treatment with ethanolic extract forestalled prolongation of the barbiturate sleeping time related with CCl4-induced liver damage in laboratory animals (mice) and restored sulphydryl (nonprotein) level in the liver. Moreover Commiphoraopobalsamum gum ethanolic extract, brought down the serum levels of bilirubin, soluble phosphatase and transaminases in CCl4-induced liver toxicity. This information proposes that the ethanolic concentrate of the gum may go about as an antioxidant effect and hepatoprotective role [17]. (Gum concentrate of Commiphoramukul have noteworthy hepatoprotective potential [18].) Furthermore in another study, Commiphoramukul was examined for cardioprotective role and guggulsterones seen to be efficient in treating the cardiovascular diseases. Myocardial infarction caused by isoproterenol in rats showed increase in glutamate pyruvate transaminase and serum creatine phosphokinase. Lipid peroxides, xanthine oxidase, and phospholipase were all the while improved in ischemic heart following decrease of cholesterol, phospholipids, and glycogen. Treatment with guggulsterone at a portion of 50mg/kg essentially ensured cardiovascular harm as evaluated by the heart biochemical parameters and reversal of blood in ischemic rats. Further pharmacological studies on Commiphoramukul interpreted that presence of medicinal constituents like ellagic acid α-pinene, masumbinone, masumbinoic acid and Eugenol subjected the gum extract of Commiphoramukul for antibacterial, antifungal, antimicrobial and antiviral properties. During the anthelmintic studies of Commiphoramukul it was found that muscanone a flavonoid alongside naringenin shows great antifungal action against the growths Candida albicans at 250 µgm ml⁻¹. Mansumbinoic acid and mansumbinone showed better antibacterial efficacy against staphylococcus species at the concentration lesser than 0.4mg /ml while alpha – terpineol and linalool act against periodontopathic microscopic organisms hindering both gram (+) and gram (-) microbes [19].

Research findings have already demonstrated that metastasis of malignancy causes transmission of carcinogenic cells through blood vessels to different body parts. The capacity to enter through blood vessel is controlled by various molecules found on the endothelial cells of the veins in accordance to various signs from cancer and inflamed cells. Guggulsterone has been appeared to inhibit the nuclear factor-κB-controlled proteins like COX-2, VEGF and MMP-9 that were seen during metastasis [20].

Furthermore investigation revealed that standardized portion from ethyl acetic acid derivation concentrates of guggul containing guggulsterone mixed in with some different steroids, esters, higher alcohols and diterpine showed beneficial effects in the treatment of atherosclerosis and hypercholesterolemia, gave the main test proof to help claims in the Ayurvedic text as hypolipidemic medicate. Guggul Markedly restrains liver cholesterol synthesis by acting on 3-hydroxy-3-methylglutaryl-CoA then diminished the low density lipoprotein level and expanded the high density lipoprotein level [20].

According to Silva et al., while studying the function of bone lipids in breast cancer metastasis to bone, indicated that sodium deoxycholate delivered from bone tissue and MG63 (osteoblast-like cells) potentiates the cell endurance and initiates relocation of metastatic breast malignant cells.
Z-guggulsterone acted as farnesoid X receptor antagonist that forestalled movement of these cells and prompted apoptosis in metastatic breast malignant cells [21]. Furthermore, Guggulsterone reduced the development and expansion of tumor cells, including ovarian carcinoma, leukemia, lung carcinoma, melanoma, multiple myeloma, head and neck carcinoma, and breast carcinoma. It additionally hindered multiplication of doxorubicin-resistant breast cancer cells, imatinibmesylate resistant leukemia, and dexamethasone-resistant multiple myeloma. Guggulsterone inhibited expansion of tumor cells by producing cell cycle arrest in the S phase, diminishing in the degrees of cyclin D1 and cdc2 causing concomitant increment in the degrees of CDK inhibitors p21 and p27 finally causing inhibition of DNA synthesis (Shishodia et al; 2007).

In another investigation led by as clinical preliminaries effect of gum guggul was analyzed in patients experiencing ischemic coronary illness showing chest pain and abnormal electrocardiogram. Guggul treatment for a half year diminished the levels of triglyceride, total cholesterol and blood lipids. Normal ECG was reestablished in 26% of the patients and over half of patients demonstrated improvement in the [22]. In another study, in-vitro antioxidant activity of ethyl acetic acid derivation concentrate of Commiphoramukul was done for total antioxidant activity and reducing power activity. The ethyl acetic acid derivation extricates Commiphoramukul showed great reducing power activity at higher concentrations at 700 nm. Total antioxidant activity was controlled by thiocyanate technique, which was estimated at 500 nm. α-tocopherol (standard), demonstrated 76.38 percent inhibition at 500 μg/ml fixation while Commiphoramukul extract indicated 51.16 percent inhibition. Antioxidant role might be identified with the phenolic acids, vitamins and micronutrients [23].

Subsequently; studies with respect to antimicrobial efficacy were done on Commiphoramukul. Volatile oil obtained from Commiphoramukul was seen as profoundly effective against Rhyzoperthadominica which recommended its role as a fumigant. Ethanolic extract of Commiphoramukul showed remarkable antibacterial action at 5mg/mL against multidrug-resistant Klebsiella pneumonia [24].It was found that antibacterial action of methanolic extract of Commiphoramukul against Gram (+) microorganisms and moderate effect against Gram (-) microscopic organisms was due to an active moiety 5(1-methyl,1-aminoethyl)- 5-methyl-2-octanone found in guggal gum [25].

Further exploration on Commiphoramukul demonstrated that Guggulipid has anti-acetylcholine esterase and antioxidant roles hence indicated defensive impact against streptozotocin-incited memory loss in the dementia model. These observations propose guggulipid as a potential antidementia medicate and psychological enhancer [26]. Consequently an ongoing report directed on neuroprotective impact of ethanolic extract of Commiphoramukul gum against oxidative stress in the cerebrum of streptozotocin (STZ) actuated diabetic Wistar rodents. The cerebrum cancer prevention agent status of Diabetic gathering rodents indicated more elevated levels of protein glycation, lipid peroxidation, and expanded exercises of sorbitol dehydrogenase and xanthine oxidase and lowered concentration of diminished glutathione and diminished exercises of antioxidant enzymes contrasted with control groups. Commiphoramukul gum treatment for sixty days in diabetic treated prevented the observed parameters of antioxidant status of Diabetic rats. This examination exhibits that Commiphoramukul gum is a powerful neuroprotective operator against oxidative harm prompted under diabetes. It has been accounted for that the defensive activity of guggulsterone is because of repression of free oxygen radicals [27].
CONCLUSION:

Guggulis well known for its medicinal benefits since ancient times. Many Herba/Ayurvedic texts have described useful effects of guggul. Various research demonstrated pharmacological various biological activities like anti-inflammatory, antiobesity, antineoplastic and antidiabetic. In this review authors have is updated the information regarding its pharmacological benefits of CommiphoraMukul and its morphological, phytochemical, pharmacological profile and containments like eugenol, guggulsterone etc.

REFERENCES:


