

PHYTO-PHARMACOLOGICAL REVIEW OF SYMPLOCOS RACEMOSA BARK**Thimmy Johnson*, K. Krishnakumar*, B. Dineshkumar***Dept. of Pharmaceutics, St James College of Pharmaceutical Sciences, Chalakudy, Kerala,
St.James Hospital Trust Pharmaceutical Research Centre (DSIR Recognized), Chalakudy, Kerala**ABSTRACT**

Symplocos Racemosa (Roxb.) known in Hindi as Lodhra, is a common, indigenous drug used by Ayurvedic practitioners. Although it is a popular drug, there are many pharmacological actions. The root, bark and leaves of this plant is traditionally used for the treatment of diarrhea, dysentery, liver diseases, uterine disease leprosy, liver complaints, uterine disorders, diarrhoea, dysentery and also in ophthalmia and conjunctivitis. Majority of phytopharmacological reports are on stem bark of the plant which include anti-cancer, hepatoprotective, anti-oxidant, anti-androgenic effect, anti-inflammatory, wound healing activity and anti-diabetic effects. Phytochemical studies indicated presence of many phenolic glycosides like symplocoside, triterpenoids like betulinic acid, acetyloleanolic acid and oleanolic acid and flavonoids like quercetin which might have contributes to protective effects. This review summarizes about various biological, chemical composition, pharmacological activity and it is our traditionally remedial gift from nature.

No: of Tables: 1**No: of References: 30**

INTRODUCTION

In modern world, plant research works has been increased because of the immense potential of medicinal plants [1]. The nature products obtain plant products can be a rich source used for many disease from ancient periods. The bioactive plants derived from different compounds apprehension for the use of synthetic drug created by influential pharmaceutical industries with their Sideffects are more dangerous than ailments. The widespread interest on Symplococaceae plants scientific work can give tremendous information about the species Symplocos racemosa Roxb. They are evergreen trees and tall about 10-15m. They are mainly found in north and east india throughout the Himalayas . The Symplocos genus comprises of 300-500 species of the Symplococaceae family . About 68 species are found in India[2]. From ancient period to current there are many ayurvedic preparatios used for the treatment of diarrhoea, dysentery, eye diseases, hemorrhagic gingivitis, uterine disorders, menorrhagia, bowel complaints, ulcers, snake bites, malaria, tumefaction and enteritis[3]. Currently modern science has much attention paid to Symplocos species due to their diverse biological activities ,particularly anti-HIV activity ,inhibitory activities against phosphodiesterase and anti-tumor applications. In Symplocos species ,Symplocos racemosa Roxb is an important plant which is used as a single drug or in multicomponent preparation .Unani medicine recently used as emmenagogue, aphrodisiac, and also act

as a potent solution can be used for inflammation and clearing uterus[4].

TAXONOMICAL CLASSIFICATION^[5]

Kindom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Ericales

Family : Symplococaceae

Genus: Symplocos

SYNONYMS^[6]: Lodhra,

Akshibhais, Rodhra, Shavaraka, Tiritra, Tilva, Galava

STRUCTURE AND CHEMISTRY

It is an Evergreen trees, tall and bark often marked with white patches. Leaves are crowded in nature with elliptic-oblong or elliptic-lanceolate^[7]. They are narrow at base, acute or acuminate at apex, glandular-serrate, crenate or subentire, glabrous on both side curves, polished and shining above the nerve pair^[8] . Flowers are about 8-18 cm long axillary racemes, white, fragrant. Fruit a drupe with ellipsoid to ovoid or oblong with 1-1.5 x 0.6 cm. Seeds are about 1-3, oblong and hard ^[9]. S. racemosa was pure source of phytochemicals which include flavonoids, phenols, tannins, saponins and glycosides^[10]. It contains several flavonoid glucosides like symplocoside, symposide, leucopelargonidine-3 glucoside, ellagic acid, rhamnetin 3-digalactoside, triterpenoids like 19 α -hydroxy acetic acid-3, 28-O-bis- β -glucopyranosides, betulin, lino-leic acid, β -sitosterol and α -amyrin

and alkaloids like oturine, loturidine, colloturine and harmine are seen as chief bio actives from the plant^[11]. Most of the flavonoids and its respective compounds have been isolated from aerial parts of the plant while glycosides of different extracted from the polar fractions of the bark of the plant^[12].

MICROSCOPIC CHARACTERIZATION

Transverse section of mature bark with a wide cork of thin-walled, rectangular cells. Cork cambium 1-3 layered. A number of stone cells towards inner sides, a number of stone cells scattered into the region having highly thickened walls with distinct pits^[13]. Mainly it contains crystals of calcium oxalate and starch grains. Secondary phloem

parenchyma, phloem fibres and stone cells, medullary rays^[14].

TYPES OF SYMPLOCOS RACEMOSA

There are two major varieties of Lodhra are Savara Lodhra and Pattika Lodhra. The second variety is described with synonyms like Krimka, Jirna, Brihat parna, Laksha, Prasadana, Tivita, Marjana, and Pattika. Thakurji reported Savara Lodhra as *Symplocos racemose* roxb and Pattika Lodhra as *Symplocos crataegoids*. Another species of *Symplocos* is *Symplocos laurina*, *Symplocos paniculata*, *Symplocos summuntia* are also used under the name Lodhra^[15].



USES OF SYMPLOCOS RACEMOSA

Traditionally Lodhra considered as a very useful drug in therapeutical aspect even years ago. Therefore we get the references of this particular in the great treatment like Charakasamhitha, Susruthasamhitha, Astan

gasangraha and in Yogarathnakara. It is mainly used for snake bite and scorpion sting. In snake bite it is given internally in the form of choorna and kashaya^[16]. Parts like bark and leaves are used for treatment of diarrhea, dysentery, for spongy gum, bleeding, leprosy, dropsy and also used in abortion, miscarriages, for ulcers of

vagina, uterine disorders. Highly extolled for the treatment of chyluria. It can be used as a main ingredient for promote maturation of malignant growths. In unani, mainly used for arrests uterine haemorrhages, abnormal secretions, aphrodisiac^[17].

PHARMACOLOGICAL ACTIVITY OF SYMPLOCOS RACEMOSA

ANTIOXIDANT ACTIVITY^[18] : The investigation on antioxidant activity with the help of measuring the level of lipid peroxidation, glutathione, catalase and protein content. The extract having tremendous activities in all antioxidant assays by reducing lipid peroxidation and catalase activity.

ANTI-ACNE EFFECT^[19]: The anti acne activity of ethanolic extracts were used and conducted. The *Symplocos racemosa* bark was tested by disc diffusion and broth dilution procedure. The final result indicates the growth of *Propionibacterium acnes*.

ALZHEIMER'S DISEASES^[20]: Many compounds were isolated from three new benzyl derivatives. The main derivatives are locoracemosides A, B and C from the extract of bark. The invitro studies was conducted to show the inhibitory activity against alpha - chymotrypsin.

ANTI-ANGIOGENIC ACTIVITY^[21]: The activity of anti-angiogenic activity in bark was present. Antiangiogenic activity exhibit by symplocomoside and symponsides, glycosides. The test shows that both isolated glycosides inhibit thymidine phosphorylase activity and associated angiogenesis.

FEMALE REPRODUCTIVE DYSFUNCTIONS^[22]

The test from the ethanolic extract of bark was used for the treatment of female disorders. From the study ethanolic bark shows two different doses which help in the treatment of female reproductive disorder induced by cold resistant stress^[16]. It was also mentioned the usefulness of *Symplocos racemosa* in uterine disorder.

ANTI CANCER ACTIVITY^[23]

The test with chloroform, butanol and ethyl acetate bark extracts has cytotoxic activity determined by using the XTT salt based on cytotoxicity assay against one leukaemia and one cervical cancer cell line. It was also reported butanol extract have highest cytotoxicity activity against hela cell line.

HEPATOPROTECTIVE ACTIVITY^[24]

The evaluated study with ethanolic extract of bark on carbon tetrachloride can induce hepatic damage in rats. Ethanolic extracts shows dose dependent restoration of serum enzymes, bilirubin, albumin, total proteins and antioxidant levels. It is an effective method for inducing hepatic damage and has a potential clinical application for the treatment of liver diseases.

THERAPEUTIC AND OTHER ATTRIBUTES

Therapeutically they are used for javara, daha, sotha, vrana. Currently used for fever, thirst, burning syndrome, inflammation, obstinate skin diseases, ulcers, worm infestation, polyuria, prusitus. In 1000 BC Charaka and Sushruta gave the

entire plant as as paste or decoction or in the form of cooked pot herb.They are given internally for the purification of vitiated blood ,chronic skin diseases, poisoning edema , intrinsic hemorrhage and malasorption syndrome.In classical period, the drug of choice for chronic skin disease and intermittent fever^[25]. According to ayurvedic texts explains that main indication of lodhra is to maintain the pithi(Agni) andkapha(phelgum) in the body.Lodhra contains the contains astringent property so the formulations made from bark parts are generally used to balance our body and ill effects in our body. Lodhra is specially used for improving the women health like menorrhagia ,it is highly effective to relaxes the uterine tissues and act on the mucus

membrane and also diseases like leucorrhoea^[26]. its helps to detoxify the blood too and Lepa(paste) form is used for the treatment leprosy. The most advantage is powdered formation of bark lodhra is used for heals wounds^[27]

DOSAGE OF SYMPLOCOS RACEMOSA

About 1 to 3 g of the dried powder form can be given .The drug decoction form of about 20 to 30 g can be given . total extract of the herb is an anti-malarial activity rodents ^[28].In swerchirin showed hypoglycemic properties and lignin and syringareinol have hepatoprotective activity. Its is an immunomodulator and even as nerve tonic .The whole plant is febrifuge and blood purifier^[29].

Table No:1 ^[30]**FORMULATION OF SYMPLOCOS RACEMOSA**

FORMULATION OF LODHRA	INDICATION
Pushyanuga churna	dysmenorrhea, irregular periods ,menstrual Cramps and excessive menstrual bleeding
Bruhat gangahara churna	Diarrhea ,dysentery and colitis
Rodharasava (lodhrasava)	menorrhagia,leucorrhoea,skin diseases,bleeding Piles

CONCLUSION

Many ethno botanical claims have been confirmed through systematic in-vitro and in-vivo pharmacological studies on different extracts of stem bark and isolated constituents. However, systematic studies on the bio-markers are desirable to establish mode of action and to validate

the traditional claim in clinical practice after proper safety assessment .From the scientific Research Symplocos has an huge biological potential The studies carried out on phytochemical and various biological properties gives evidence for use of this plant for various indication.Further research should be carried out for scientific base for possible role of plant to treat diseases such

as HIV, Diabetes and skin diseases. The conservation data of genus *Symplocos* showed risk of extinction due to restricted distribution in the wild hence systematic techniques should be developed for the maintenance of this plant. Because its have tremendous benefits for human in current scenario.

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