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Review on -*Zanthoxylum rhetsa* (Roxb) DC, A folk medicine

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ABSTRACT

Zanthoxylum rhetsa(Roxb). DCis a drug which belongs to family Rutaceae, which is described with manifold activities. It has been obscurely explained inSamhitas. It is named by tejasvinitejovatitejobalatejohva.Its different pharmacological action has been seen, but recently a plentiful knowledge of this drug is obtained. It's all parts are used for different actions such as Leaves shows thrombolytic (invitro)anticentodal property. Spines relieves breast pain. Seeds act as antimicrobial, antioxidants properties. Stem as antioxidant, cytotoxic, photo protective, antidiarrheal. Root bark as cytotoxic, antidiarrheal. Essential oil as aromatic, antimicrobial.Extract as deworming remedy. In this paperZanthoxylum rhetsa(Roxb). DCdrugs detail review has been done through Samhitas, Nighantus, recent books and internet

Key wordsZanthoxylum rhetsa (Roxb). DC, spines, leaves,Rutaceae, Tejovati

Introduction

Ayurveda the ancient science where treatment explained through herbs and minerals.Plants are the main core of this science. A drug shows multidisciplinary action. According to estimation of the world health organisation approximately 80% of the world inhabitants rely mainly on traditional medicine Zanthoxylum rhetsa (Roxb). DC which belongs to family Rutaceae, it is named as "Indian Prickly Ash" is one of the ethnic medicine, folk use drug.

In the tribal society using vegetation and its components as drugs were widely practised from ancient periods, studies on traditional knowledge on folk medicine has accounted that over 7500 species different plant species found in this ecosystem are used by various ethnic tribes for primary health care.there are many uses of this plant. Itis one such source plant for the drug 'Tumburu' mentioned in Ayurveda for its utility in the diseases like Kushta, Shoola and Krimi. But, its use in Siraja Granthi is not mentioned in the Ayurvedic literature. The folklore practitioners of Dakshina Kannada District are successfully using the bark powder mixed with lemon juice as external application in case of varicose vein. It is also called by name Tejasvini(tejbala)Tejashwini tejovatitejovhatejbala.

Literature review

Drug Review -

In Samhitas ***Zanthoxylum rhetsa* (Roxb) DC**. Described obscurely. In Nighantus, it can be considered as a varietyof "*tumburu"* which is explained for *kushtha, vrana, arochak, mukharogas.* As like in folk medicine practice it is used in different conditions, traditional healers have used different species of the Zanthoxylum for treatment on a wide range of disorders, including urinary and venereal diseases, rheumatism and lumbago. The bark decoction is used to treat chest pain and chewed bark applied as antidote for snake bites. The eastern Nigerians use the roots as chewing stick to treat dental caries.The traditional uses of *Zanthoxylum* species as food and in medicinal practices are observed,its reference can be seen in Indian medicinal plants, Indian Materia Medica, Bhava *PrakashNighantu, NighantuAdarsh*, and available source through net

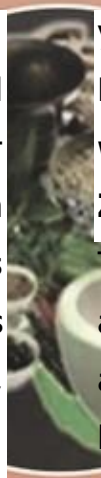
***Zanthoxylum rhetsa* (Roxb) DC**

Botanical name- *Zanthoxylum rhetsa* (Roxb) DC

Family - Rutaceae
Kingdom -Plantae
Clade -Angiosperms
Clade -Eudicots
Clade - Rosid's
Order - Sapindales
Family - Rutaceae
Genus - *Zanthoxylum*
Species - *Zanthoxylum rhetsa*

Family – Rutaceae

The Rutaceae family; which is named as Rue or citrus family comes under order Sapindales, itsflower is with great fragrance, also contains economically important genus such as citrus which include orange, lemon, grapefruit. It has highly commercial oil production, economical trees, and ornamental species,other large genera such as Zanthoxylum, Melicope and Agasthoma are also included. It comprises 150 genera and 1300 species out of which India contributes 71 species This family is distributed in tropical and temperate regions, mainly found in South Africa and Australia. Its key features are, mainly contains small and medium shrubs, Leaves are aromatic containing oil glands, Flowers with 4-5 sepals, petals are white, yellow, purple pink or red in colour, Fruit is capsule which releases seed when ripe.



Zanthoxylum species

Trees or erect or climbing shrubs often armed with stout prickles. Leaves are alternate, trifoliolate or imparipinnate leaflets opposite or alternate entire or crenate often oblique pellucid punctuate. Flowers small in cymes often unisexual calyx 3-8fid rarely, petals 3-5 sometime disk small or obscure stamens 3-5 hypogynous reduced to scales in male flowers ovary of 1-5 carpels rudimentary in the male, styles free or connate above, stigma capitate ovules 2 in each cell Fruit, 1-5 carpels dehiscing ventrally

Synonyms

Zanthoxylum limonella
Zanthoxylum budrunga

Zanthoxylum oxyphyllum

Fagarabudrunga

Fagararhetsa

Fagarapiperata

Vernacular name name

Assamese- Bajamani, Bajarmali

Kannada- Jummina, Arempala, Kadumenasu

Khas - Dieng soh mink

Malyalum – Kothumirrikku, Mullilava, Mullilam

Naga – Hechui ching

Tamil- Iraccai, Karuppak

Telagu – MorapuRachu

Marathi- chipal, chirphal

Goa- chirphal, kokleetessul

English- Indian prickly ash

***Zanthoxylum rhetsa* (Roxb) DC *(budrunga)* morphology**,

A small or moderate sized**Tree** with pale corky **Bark** covered with conical prickles on stem and branches and sometimes a few small ones on leaf rachis young prickles up curved	
Leavesare clustered towards the end of the stout branchlets equally pinnate 30-60cm long including the petiole leaflets 5-20pairs, 7-15cm long oblong or lanceolate caudate entire or crenate. When crenate with a large gland in the sinus very oblique at base rounded on the upper side with the lamina shorter narrower and acute on the petiole on the lower side	

Flowers in large terminal paniculate cymes often more than 30cm broad the branches opposite angled bracts minute caducous peduncle very long sometimes prickly calyx lobes minute triangular. Petals 4, elliptic 2.5mm long yellow valvate. Ripe carpels 5mm diameter	
Fruit-(capsule) spherical tubercle purplish aromatic **Seed**s globose bluish black smooth shining tasting of black pepper	

Pharmacology

Its *Rasa is tiktakatu; Guna is deepanpachan;*which clears the throat it is*ushna, ruchikara and tikshna; Virya is ushna, Vipaak is katu;*it subsides*kaphaand vata;* it is indicated in *kaphavata* disorders *kasashwasamukharogadantarogahikka ama* and *arsha.* According to *Charak* it is *arochak* used in *urustambha mukhashodhan*, bark in *shirovirechana*and explained in *katuskandha* and also mentioned *tumburu* in *phalavarga* and *tejovati* in *twachavarga;* According to *Sushruta* it is used in *vranashodhan nadivrana* kushtha dustvran*a* with other ingredients it is used as shodhan rupi and in*mudhagrabhajwara abhyanga atisar.* Its bark chewed in toothache it is used as toothbrush. Its Seeds and bark are fragrance and *balya;* It is used in fever *atisar* and *visuchika* It is digestive and *vatagna*Is cultivated in Ceylon Constituent's essential oil. Fruit is useful as a condiment in curries it has stomachic and digestive properties and is prescribed in urinary diseases, dyspepsia arising from atrabilis also in some forms of diarrhoea, so also the bark is used root bark is reputed in

Goa to be normal functioning of the kidneys, bark is aphrodisiac and bitter, aromatic fruit is powdered steeped in water and distilled and the distillate is given as a remedy for cholera in rheumatism the fruit is given in honey According to Bhavamishra its fruit is *deepak* and *pachak* so used in *adhmanaajeerna, atisar*; In *amavat* with *madhu* it is used; its *Mulatwak* is *mutrala,* used in *dantshool, pakshaghat, jeernaamavat* . It is *vrushya* bitter in taste, with frangant odour

Chemical constituent's – It contains minerals like nitrogen, phosphorous, calcium, sodium, magnesium, sulphur, copper, etc, bioactive compounds such as phenolic compound, essential oil, alkaloids, terpenoids coumarins, bitter principle, glycosides, anthraquinones, zanthorhetsamide secondary metabolites like,8 methoxy -n-methylflindersine and zanthodioline are also seen. Zanthoxylum rhetsa

Pharmacological activities of Zanthoxylum rhetsa through recent research papers

Part used	Material and methods	Observation/results
Roots and stem barks	Nine compounds with zanthorhetsamide where isolated spectroscopic method was used to analyse the structures, the isolates of antibacterial activity was evaluated	Dihydrochelerythrine had shown strong activity against methicillin-resistant *Staphylococcus aureus* and moderate activity against *Escherichia coli* thus emphasising presence of antibacterial compounds
Spines	GC-MS analysis of ethanolic extract	Fifteen compounds were identified.
Leaves and seeds	Volatile constituents wereanalysed by GC and GC/MS	identification of 118 compounds from the leaf oil and 77 compounds from the

		seed oil.
Stem bark	The methanolic extract of given by oral route to mice at doses of 250 and 500 mg/kg,	significantly reduced the abdominal contraction induced by acetic acid and the diarrhoeal episodes induced by castor oil in mice thus showing antidiarrheal effect
Fruits	Preliminary phytochemical screening and HPTLC profiles for various secondary metabolites were carried out,	the presence of 8 Glycosides, 10 Flavonoids, 6 Essential Oils, 5 Anthraquinones, 9 bitter principles, 7 Coumarins and 8 Terpenoids
Spine	The paste prepared by rubbing the hard spines on the rock along with water applied on the breast	It gives relief from pain and increase lactation in nursing mothers.
Bark	The photo protective effect was measured based on the sunscreen protection factor (SPF value) and UV absorption spectrum of various solvent fractions of the plant. The free radical scavenging properties were assessed using the selected antioxidant assays, namely, diphenylpicrylhydrazyl (DPPH) and nitric oxide (NO) free radical scavenging assays.	In both assays, the ethyl acetate exhibited the highest activity followed by the butanol fraction. The DPPH and NO free radical scavenging activity were highly expressed in the ethyl acetate. These results indicate that the bark extract of Z. rhetsa has great potential for use as a natural active ingredient in broad spectrum sunscreen and anti-ageing

		cosmetic preparations.
Bark	In major volatile constituents present in different solvent fractions of *Z. rhetsa* bark using GC-MS analysis. The solvent fractions and purified compounds were tested for their cytotoxic potential against human dermal fibroblasts (HDF) and mouse melanoma (B16-F10) cells, using the MTT assay.	All the solvent fractions and purified compounds were found to be non-cytotoxic to HDF cells. The presence of bioactive lignans and alkaloids were suggested to be responsible for the cytotoxic property of *Z. rhetsa* bark against B16-F10 cells.
Whole fruit, pericarp and seed	Various extracts from differential parts of *Z. rhetsa* via inhibition of inflammatory mediators the chemical composition in active extracts was also analysed by GC/MS. The methods of extraction included maceration in hexane, 95% ethanol and 50% ethanol, boiling in water, and water distillation.	The results demonstrated that the hexane and 95% ethanolic extract from pericarp (PH and P95) and seed essential oil (SO) were the most active extracts. PH and P95 gave the highest inhibition of NO production, and they also showed the highest anti-inflammatory effect
Root and Stem barks fruits	Secondary metabolites have been isolated from the roots, stem barks, and fruits.	The plant contains Alkaloids, phenolics and terpenoids as the main constituents of the specie. The presence of those compounds gives base for the several biological activities of the plant such as antibacterial,

		anti-inflammatory, antinociceptive and antidiarrheal, antioxidant, cytotoxic, thrombolytic Activity and photo protective properties

Conclusion -The present paper, describes about the drug, *Zanthoxylum rhetsa* (Roxb) DC, its family, Rutaceae characteristics, with *its,* synonyms, vernacular name, morphology and its traditional uses with reference of ancient Samhitas and Nighantus, Available scientific literature shows that many phytoconstituents exhibit different pharmacological activities.Thus, validating the local claims of Z. rhetsa as an important resource for therapeutic agents and it is a drug where all the parts used for treatment purpose for many ailments. Consequently, this literature review may support the upcoming researchers in their further studies.

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