



Plumbago Zeylanica-A Review

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Abstract

Plants have been the basis as medical treatments and such traditional medicine is still widely practical today. Modern medicine began a move away from herbal treatments in the 19th century. Plants derived chemical compounds remained an important part of medicinal treatment. As herbal medicines are relatively non-violent and nontoxic in nature. Plumbago zeylanica is widely used plant for its therapeutic practices in traditional system of medicine. Plumbagin is the most common and broad-spectrum phytochemical of P. zeylanica. The present study contains existing information on plumbago zeylanica, its medicinal uses, as an advance to additional study.

Keywords

Plumbago Zeylanica

INTRODUCTION:

It is an evergreen small perennial shrub, which grows to a height of about 3-4 feet. It is innate to South Asia. It is dispersed in tropical and subtropical countries of the world. Budding in deciduous woodland, savannahs, scrublands from sea level up to 2000 m altitude.^{1,2} In India it is sprinkled in central India to West Bengal, Maharashtra, and Uttar Pradesh to some parts of South India. The plant also enjoys regional names in different state

Gujarati: Agni / vahini

Kannada: chitramula,

Malayalam: chitrakmulla/ bilichitramulla,

Punjabi: Veellakeduveli,

Bangali: chitra,

Tamil: chita,

Telugu: kodiveli/ chitramoolam,

Hindi: chitraka/chitramol,

Sanskrit: chitra.³

But commonly used name persisted to be chitraka.⁴

⁵ Plumbago is from Plumbaginaceae family comprises of 10 genera and 280 species. The genus Plumbago take account of 3 species that is Plumbago indica L. (P. rosea L.) P. capensis L., and P. zeylanica L., in all these 3 species Plumbago zeylanica is most cultivated because of its high therapeutic uses. . The

leaves and root bark contains plumbagin, which has several therapeutic effects.

DESCRIPTION:

Leaves- simple, alternate, oblong, spirally arranged, hairy margin, thick & flashy, 4-10 cm long, pointed at the tip.⁷

Flowers- white in colour, 10-25 cm long, inflorescence is terminal racemose, bracts ovate to lanceolate, bisexual, regular, pentamerous, sweet-scented, calyx is green about 1 cm covered with long stalked glandular hairs. Corolla is white, with five petals.⁸

Fruits- are small cocklebur with glue on the soft spines and they will stick to anything, an oblong capsule, apex acute with 5 furrows, 1-seeded, seed oblong, 5-6 mm long, reddish brown to dark brown.

⁹ Roots - stout, cylindrical, friable, blackish red in color, with a pungent odour. ⁹



Fig 1: Showing *plumbago zeylandica*

TAXONOMICAL CLASSIFICATION:

Kingdom: Plantae

Order: Caryophyllales

Family: Plumbaginaceae

Genus: Plumbago

Species: *P. zeylanica*

Vernacular names:

Hindi: Chira, Chitrak

English: White flowered leadwort, Ceylon leadwort

Gujrati: Chitrakmula

French: Dentalaire

Arabic: Shitaraj, Enkin

CHEMICAL CONSTITUENTS:

Plumbago zeylanica contains various chemical constituents are:

- Leaf - It mainly consists of plumbagin, it also contains Plumbagic acid, Beta-sitosterol, 4-

hydroxy-benzaldehyde, Trans-cinnamic acid, 2, 5-dimethyl-7-hydroxy chromone, Isoshinanone, Indole-3-carboxaldehyde & Vanillic acid.¹⁰

- Roots - it mainly consists of naphthoquinone, also have 5,7-dihydroxy-8-methoxy-2-methyl-1,4-naphthoquinone (plumbagin), Biplumbagin, Chloroplumbagin, Maritinone, Elliptinone, 2-(1-hydroxy-1-methyl-ethyl)-9-methoxy-1,8-dioxadicyclopenta, Naphthalene-4,10-dione, 9-hydroxy-2-isopropenyl-1,8-dioxadicyclopenta, Isoshinanone, 2-isopropenyl-1,9-methoxy-1,8-di-oxadicyclopenta, Lapachol.

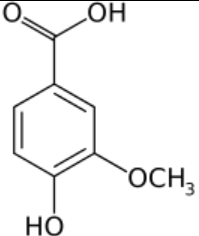
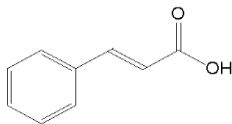
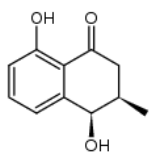
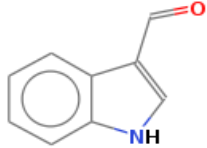
Coumarins - 5-methoxy seselin, Seselin, Suberosin, Xanthylctin, Xanthoxylctin.

Plumbic Acid- 3'-O-β-glucopyranosyl plumbagic acid, 3'-O-β-glucopyranosyl plumbagic acid methyl ester.¹¹

Enzymes - Invertase, Protease.¹²

Other Compounds- Zeylinone, glucose, fructose, isozeylinone, droscone, plumbaginol.

- Flower - Plumbagin, Glucose, Zeylanone.¹²
- Stem - Plumbagin, Dihydroflavinol plumbaginol, Sitosterol, Isozeylanone.¹³
- Fruit - Plumbagin, Glucopyranoside, Sitosterol.¹⁴
- Seed- Plumbagin.¹⁴

 vanillic acid	 Cinnamic acid
 Isoshinanone	 Indole 3 - carboxaldehyde

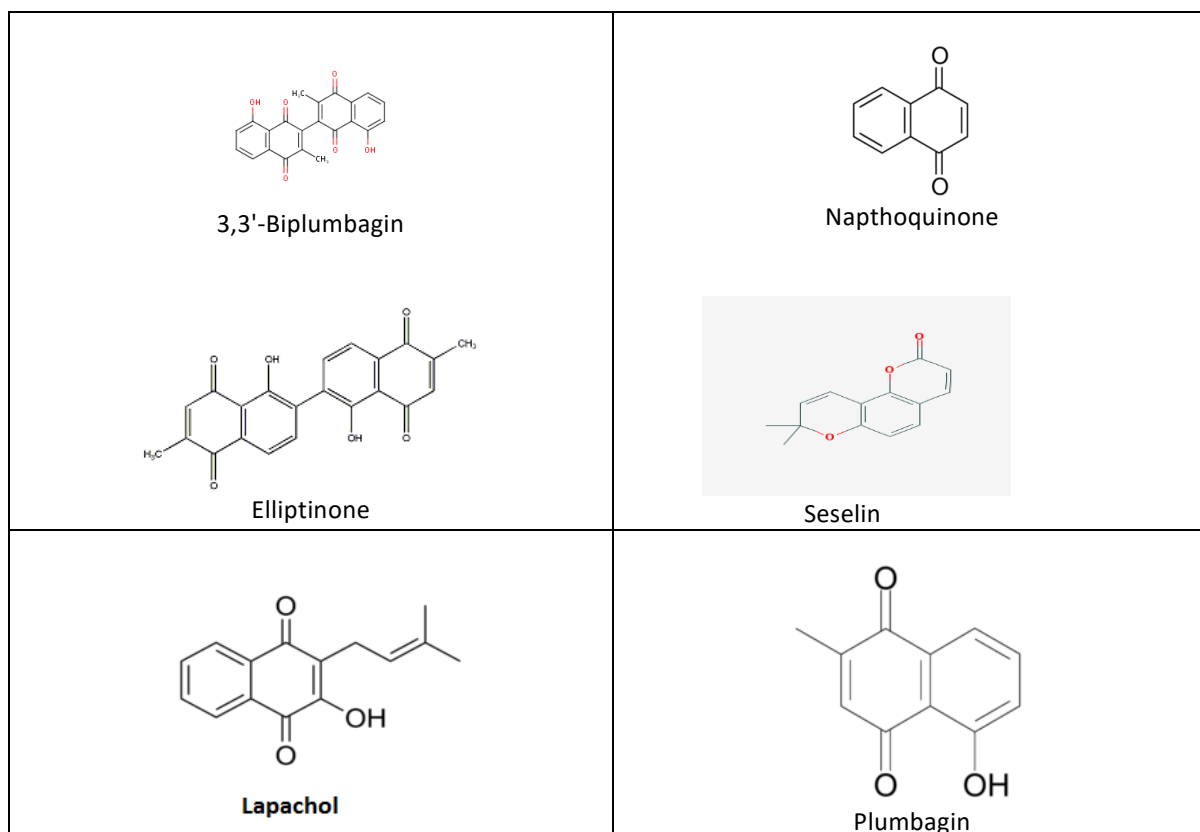

Fig 2: Showing chemical constituents of *plambago zylendica*

Table 1: summary of pharmacological activity of *plambago zylendica*

S. No	Plant Part	Activity	Extra ct	Model	Std Drug	Dose	Paramet ers	Mech.	Stats	P Val ve	Author & Year
1.	Ro ots	Antimicro bial Activity	Ethan olic Extra ct	Multi Resistan t Strains Of E.Coli & Shigella.	Strepto mycin And Rifamp acin	-	Gastro Intestin al Flora	High Activity & MIC Value Is Calculat ed.	-	-	Durga Et Al. 1900 ¹⁵
2.	Ro ots	Anti Hyper Lipidemic Activity	Ethan olic Extrac t	Anti Hyperlipi demic Activity In Rabbits.	-	-	Cholest erol & LDL Is Noted.	Reduces Serum Choleste rol And LDL- Choleste rol By 53 To 86% And 61 To 91%	-	-	Sharm a Et AL., (1991) ¹⁶
3.	Ro ots	Anti Hyper Lipidemic Activity	Ethan olic Extra ct	Anti Hyperlipi deamic Activity.	-	-	Cholest erol And LDL Are Noted.	Reduced The Serum Choleste rol, LDL, Choleste rol and	-	-	Ram Et Al, 1996 ¹⁷

								Triglycerides			
4.	Roots	Anti-Bacterial Activity	Alcoholic Extract								Wang, Huang 2005 ¹⁸
5.	Roots	Antimicrobial Activity	Ethanol, Ether, Aqueous Extract	Anti-Methacillin Streptococcus Aureus	Streptomycin And Rifampicin	-	Bacteria & Fungal Growth.	High Activity & MIC Value Is Calculated.	-	-	Aquil Et Al. 2006 ¹⁹
6.	Roots	Antimicrobial Activity	Ethanol Extract	Multi Resistant Strains Of E.Coli & Shigella.	Streptomycin And Rifampicin	-	Growth Of Bacteria & MIC Value.	High Activity & MIC Value Is 0.64-10.24 Mg/ML, Delayed Growth	-	-	Ahmed Et Al. 2007 ²⁰
7.	Leaf	Anti Fertility Activity	Petroleum Ether, Acetone, Ethanol & Aqueous Extract	Estrous Cycle Of Rats	-	-	Anti Ovulatory Effects.	It Exhibited A Prolonged Diestrous Stage Of The Estrous Cycle Corresponding To A Temporary Inhibition Of Ovulation.		P<0.05	
8.	Leaf	Anti Cancer Activity	Ethanol Extract	Ehrlich Ascites Carcinoma	-	-	Anti-Tumor Activity, Hematological And Liver Biochemical Parameters.	Tumor Transplantation	Mean + SEM. Data Were Assessed By The Student	P<0.05	Sachin Hiradeve, Kishor Danao, Vijay Kharabe, Bibhlesh Mendh

									T-Test		e 2010 ²¹
9.	Ro ots	Anti Inflamma tory Activity	Ehan olic Extra ct	Acute Inflamm ation	-	-	Acute Inflamm ation & It Suppres s The Activati on Of NF- Kappa B In Tumour Cells And Prevent ed Graft Versus Host Disease- Induced Mortalit y In Mice	Reduces Inflamm ation.	-	-	Sheeja Et AL., (2010) ²
10 .	Ro ots	Anti Inflamma tory Activity	Ethan olic Extra ct	Carragee nin Induced Raw Paw Oedema	-	-	Acute Inflamm ation	Supressi on Of Inflamm ation.			Arunac hala Et AL., 2010 ²³
11 .	Ro ots	Hepatopr otective Activity	Ethan olic Extra t	Streptoz otocin Induced Diabetic Rats	-	-	Hypogly caemic And Hepato- Protecti ve Nature	Increase d Hepatic Hexokin ase Activity And Decrease d Hepatic Glucose- 6- Phospha tase, Serum Acid Phospha tase (ACP), Alkaline Phospha tase (ALP) And Lactate	-	-	Zarmo uh Et AL., 2010

								Dehydrogenase (LDH).			
12.	Roots	Anti Ulcer Activity	Alcoholic Extract	Indomethacin Induced Ulcer	Omeprazole	20mg/Kg	No. Of Lesions Formed.	Indomethacin-Induced Acute Gastric Ulceration	Mean + SEM Using One Way ANOVA	P<0.05	Kakjing Dadul Falang, Mary Ogonnaya Uguru, Noel Nenman Wannang, Iliya Hosea Azi, Nwoye Chiamaka 2012 ²³
13.	Roots	Wound Healing Effect	Ethanol Extract	Oxidative Stress In The Pathogenesis Of Non-Healing Ulcers.	-	-	Low Levels Of Oxidative Stress & Reactive Oxygen Species.	Antioxidants Helps In Wound Healing.	-	-	Jyothi Et Al., And Kodati Et Al., (2013) ²⁴

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