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Ichnocarpus Frutescens: A Medicinal Plant with Broad Spectrum

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ABSTRACT: *Ichnocarpus frutescens* (Black Sariva), an indigenous plant belongs to family Apocyanaceae. According to ayurveda, the plant is having a broad spectrum of use as in atrophy, bleeding gums, convulsions, cough, delirium, dysentery, glossitis, heamaturia, measles etc.Literature data reveals the presence of phenylpropanoids, phenolic acids, coumarines, flavanoids, sterols and pentacyclic triterpenoids and found to have anti-inflammatory, analgesic, antidiabetic, antioxidant and antitumor spectrum of activity. This review article tried to critically cover all the necessary aspects related of *Ichnocarpus frutescens*.

KEYWORDS: *Ichnocarpus frutescens;* Apocyanaceae; Medicinal Plant; Pharmacological Uses.

INTRODUCTION

Ichnocarpus frutescens R. Br., commonly known as Black Sariva, is an important medicinal plant found through out the India, belonging to family Apocyanaceae[1]. *Ichnocarpus frutescens* considered as a substitute for *Hemidesmus indicus* (Indian Sarsaparilla)[2].

The botanical identification of plants is the most crucial and basic thing in pharmacognostic investigation of any medicinal plant. This will render all further studies on chemistry and pharmacology.

Review of Plant *Ichnocarpus frutescens* R. Br. (Family- Apocyanaceae)

1. **Distribution**

   This is a climbing plant, found almost in all parts of India, ascending to an altitude of 1200 m [3].

2. **Vernacular Names** [4]

Assam	Lamkandol, Paharukibandan
Bengal	Dudhi, Syamalota
Dehradun	Bel kamu
Hindi	Kalidudhi, Siamalata
Kannad	Karehambu

Malayalam	Paalvally
Marathi	Krishnasarwa, Kantebhouri
Oriya	Syamolota, Madhodi
Sanskrit	Syamlata, Sariva
Tamil	Udargodi
Telugu	Illukatte, Nalateage

3. Morphology

Ichnocarpus frutescens is a climbing shrub with rusty-tomentose branches. Leaves variable, opposite, elliptic-oblong or lanceolate, softly tomentose beneath, glabrous above. Flowers are purple or greenish-white, minute, borne in long terminal and axillary paniculate cymes. Fruits follicles, slender, cylindrical, curved. Seeds white with a coma [2].

4. Reported Phytoconstituents

Studies on chemical constituents of the plant reveals the presence of phenylpropanoids, phenolic acids, coumarines, flavanoids, sterols and pentacyclic triterpenoids i.e. Δ^{12}-dehydrolupanyl-3β-palmitate, lupeol acetate, friedelin, friedelinol, Δ^{12}-dehydrolupeol, oleanolic acid, nonane, 5-hydroxyoctacosan-25-one, dotriacontanoic acid, sitosterol and sitosterol palmitate [5].

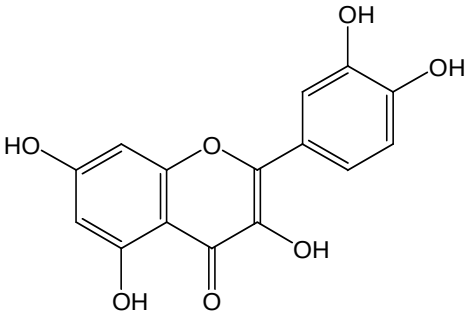
Stem contains α-L-rhamnopyranosyl-(1→4)-β-D-glucopyranosyl-(1→3)-α-amyrin, 6, 8, 8-trimethylpentacosan-7-one[6], α-amyrin and its acetates, lupeol and its acetates, friedelin, epi-friedelinol and β-sitosterol [7], n-butyl oleate, n-octyl tetracontane, tetratriacontadiene, n-nonadecanyl benzoate, benzocosanyl arachidate[8] .

Leaves contain flavones viz. apigenin and luteolin, glycoflavones i.e. vitexin and isovitexin, proanthocyanidin and phenolic acids, vanillic, syringic and synapic acid, protocatechuic acid[9]. Ursolic acid acetate, kaemferol, kaemferol-3-galactoside (trifolin) and mannitol were also identified from leaves[10].

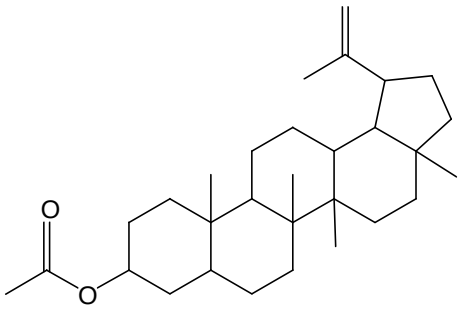
Roots reported to consist of β-sitosterol[11] and 2-hydroxy-4-methoxybenzaldehyde[2].

Flowers contain quercetin and quercetin-3-*O*-β-D-glucopyranoside[12].

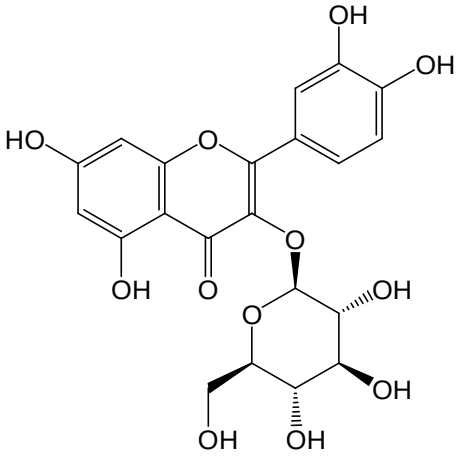
STRUCTURES OF REPORTED PHYTOCONSTITUENTS



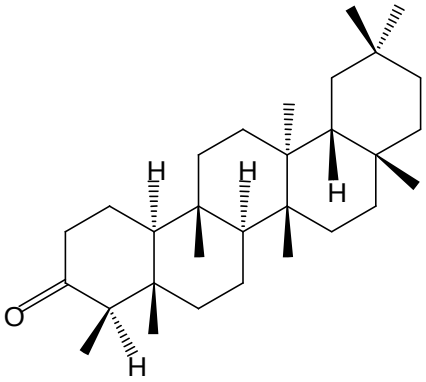
Quercetin



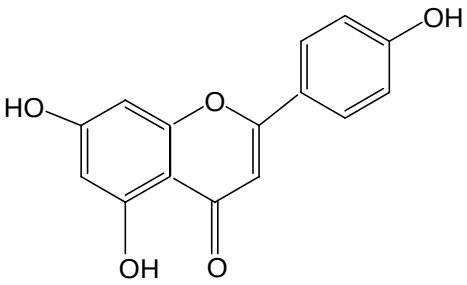
Lupeol



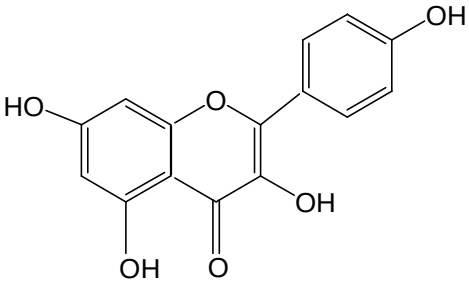
Quercetin-3-O-*β*-glucopyranoside



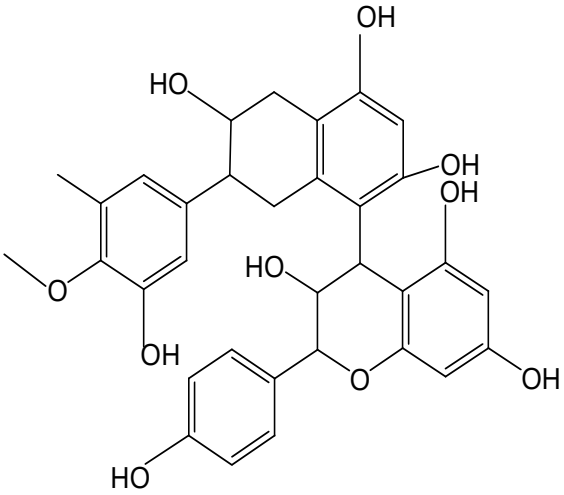
Friedelin



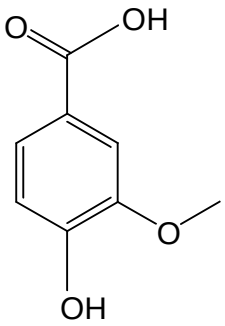
Apigenin



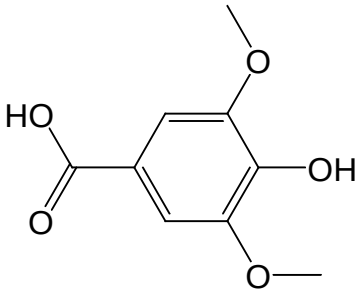
Kaemferol



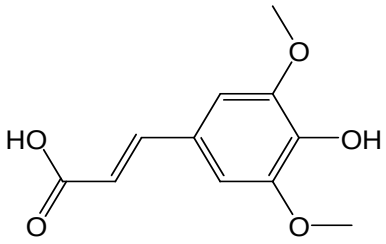
Proanthocyanidin



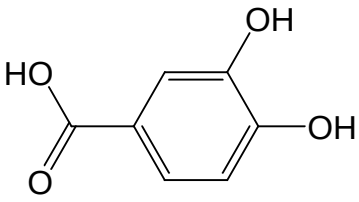
Vanillic acid



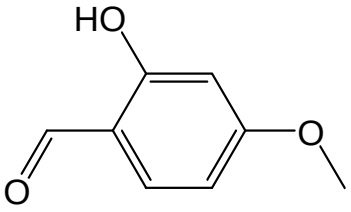
Syringic acid



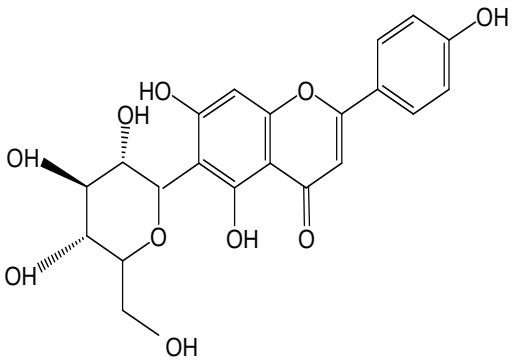
Synapic acid



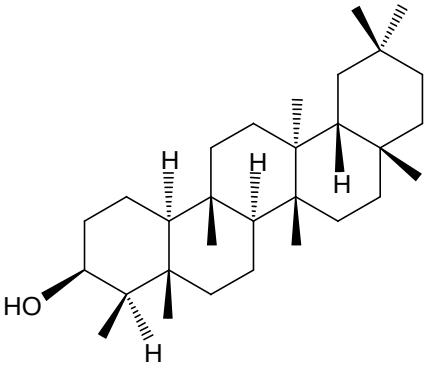
Protocatechuic acid



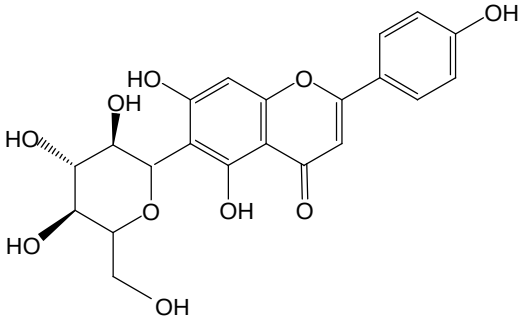
2-hydroxy-4-methoxybenzaldehyde



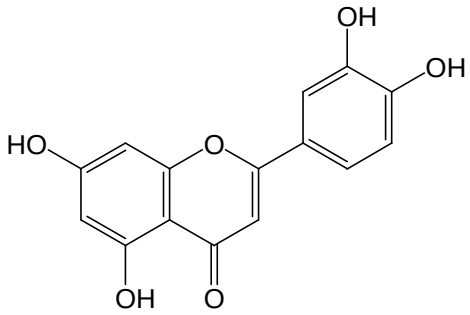
Vitexin



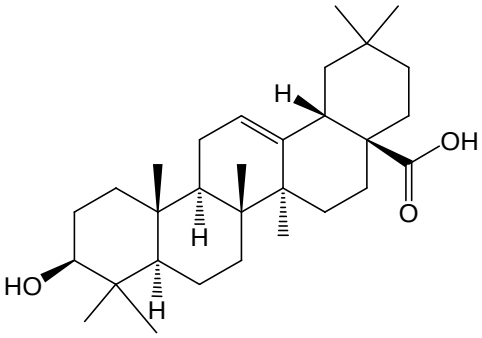
Epi-friedelinol



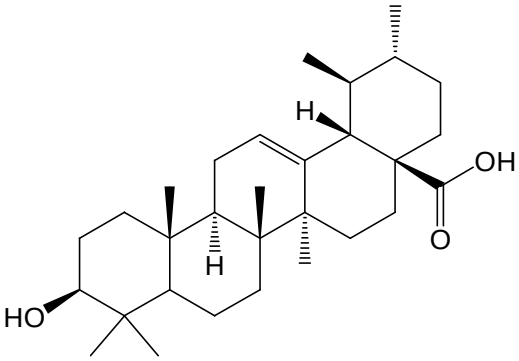
Iso-vitexin



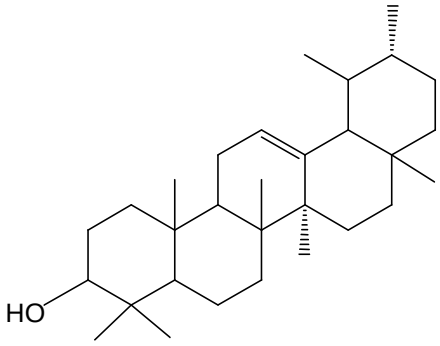
Luteolin



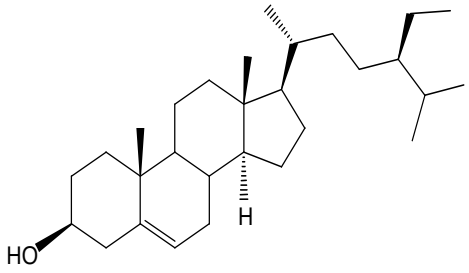
Oleanolic acid



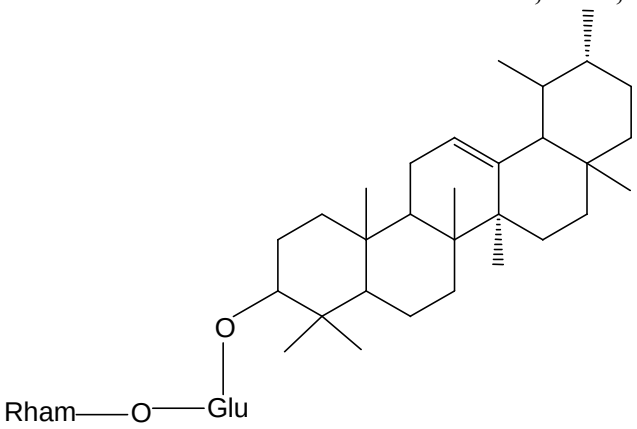
Ursolic acid



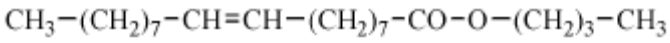
***α*-amyrin**



***β*-sitosterol**

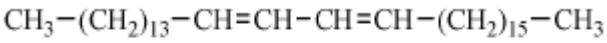


***α*-L-rhamnopyranosyl-(1→4)-*β*-D-glucopyranosyl-(1→3)-*α*-amyrin**

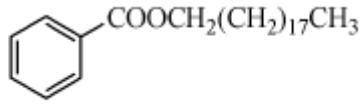


n-Butly oleate

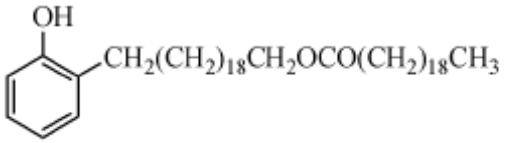
n-octly tetracontane



Tetratriacontadiene



n-nonadecanyl benzoate



Benzocosanyl arachidate

PHARMACOLOGICAL USES

Leaves and roots of *I. frutescens* are considered to be an important drug in the indigenous system of medicine, used as a substitute for Indian *Sarasparilla (Hemidesmus indicus)*.

Chloroform and methanolic extracts of whole plant of *I. frutescens* are reported to posses the hepatoprotective and antioxidant activity[13].

Methanolic extract of roots of *I. frutescens* has been reported for anti inflammatory and analgesic activities[14]. Aqueous extract of roots posses antidiabetic activity in Streptozotocin-nicotinamide induced type-II diabetes in rats[15].

Hydroalcoholic extract of leaves of *I. frutescens* shows anti inflammatory activity[16] and also posses α-Glucosidase inhibitory and in-vitro antioxidant activities. Polyphenolic extract of leaves is reported to posses activity against tumors[17].

Medicinal Uses

Whole plant is used as tribal medicine in atrophy, bleeding gums, convulsions, cough, delirium, dysentery, glossitis, heamaturia,

measles, night blindness, relieves pain due to insect bites, splenomegaly and tuberculosis. Plant is also used in abdominal and glandular tumors.

Roots are used as a substitute for Indian *Sarasparilla (Hemidesmus indicus)* as alterative, antidysentric, antipyretic, demulcent, diaphoretic, diuretic, hypoglycemic and tonic; beneficial in anorexia, leucorrhea, skin diseases, syphilis and urinary calculi.

Warm leaves are applied by the tribes of Rajasthan, on the swelling to cure guinea worm infection. Decoction of leaves and stems is used in fever and skin eruption[1,2,4]

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