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Vigna trilobata (L.) Verdc: a review of medicinal uses, phytochemistry and pharmacology

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Abstract

Vigna trilobata (L.) VERDC. belongs to family Papilionaceae found throughout the tropical and warm temperate regions of the world. In folk medicine, it is used in arthritis, fever, cough, dysentery and urinogenital disorders. Different secondary metabolites such as alkaloids, glycosides, terpenoids, flavonoids have been reported in *Vigna trilobata*. Antioxidant, antidiabetic, anti-inflammatory activities have been shown by *Vigna trilobata*.

Keywords: *Vigna trilobata*, ethnomedicine, phytochemistry, pharmacology

Introduction

Vigna trilobata (L.) Verdc. Belongs to family Papilionaceae is native to Asia and found throughout the tropical and warm temperate regions of the world including Africa, Australia, Madagascar, Mauritius, South America and India^[1].

Name of *Vigna trilobata* in different languages^[1-3]

Languages	Names
Bengla	Mugani
English	African gram, Jungle mat bean, Math bean, Three-lobed kidney bean, wild kidney bean
Gujrati	Adavada, Magavala, Adabaumagi
Hindi	Ranmoong, Mudgarni, Mgani, Mugawana, Mungani, Triangul Rakhalkalai, mugam, trianguli, mungvan, Ranmoong, mudgarni, Mugani, Mugawana, Mungani, Trianguli, Banmoong
Marathi	Ranmath, Jangalimath, Arkamath, Ranamuga
Sanskrit	Aranyamudga, Ilrasva, Karanjija, Koshila, Kurangika, shimbi, Vanamudga, Vanya, Kshudrasaha, Mudgaparni, Aranyamudga, kakamunga
Sinhala	Bin-me, munwenna
Tamil	Naripayar, Panipayar
Urdu	Jangli-math, Mukni, Mugwan

Taxonomy^[1-4]

Kingdom	Plantae
Family	Papilionaceae
Subfamily	Faboideae
Tribe	Phaseolae
Sub tribe	Phaseolinae
Genus	<i>Vigna</i>
Species	<i>trilobata</i>
Synonyms	<i>Dolichos trilobatus</i> L., <i>Phaseolus trilobatus</i> (L.) Schreb., <i>Phaseolus trilobus</i> Ait.
Plant	Annual or perennial herb, prostrate, branches glabrous or pubescent.
Leaves	Alternate and trifoliate, 4-8cm long with grooved petiole. petiole 3.7-7.5 cm long; leaflet 1.2-2.5 cm long, usually as broad, generally 3-lobed, the middle lobe bigger, oblong, broadly spatulate, obtuse, the lateral lobes oblong, broadly spatulate, obtuse or subacute, glabrous to subglabrous; petiolule 1.5-2.5 cm long; stipels small; stipules 4-15 mm long.
Inflorescence	Axillary, many flowered, peduncle 2.5-9.5 cm long, bracts 4-5 mm long, pedicel 2-3 mm long, bracteoles 4-7 mm long.
Flower	Inflorescence a few flowered raceme, peduncle c. 8-22.5 cm long. Bract deciduous; bracteoles c. 3 mm long, below the calyx. Pedicel 2.5 mm long. Calyx 2.5 mm long, glabrous, teeth minute. Corolla yellow, 5-6.5 mm long.
Fruit	2.5 to 6 or 7 cm long, 3 mm wide, glabrous or sparingly pubescent, green when immature and turn black on maturity, dehiscent, with small, black, blue or sometimes whitish seeds.
Seeds	6-12 and are uniform with a dark brown shining seed coat.

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*Vigna trilobata***Table 1:** Ethnomedicine [1, 3]

Part	Uses
Plant	Febrifuge, anti-inflammatory, sedative, arthritis, oedema, urinogenital disorders.
Leaves	Antibilious, coolant, sedative, tonic, eye problem.
Fruit	Anthelmintic, aphrodisiac, astringent, styptic, biliousness, burning sensation, cough, dysentery, fever, gout, inflammation, pile, thirst.
Roots	Fever, cough, diarrhea, dyspepsia, hemorrhoids.

Table 2: Nutritional value of seeds [5]

Water	5.19g/100g	Amino acid (g/ 100g of seed protein)	
Energy	1593.96 kJ/100g	Alanine	5.81
Proteins	100g/100g	Arginine	5.28
Ash	2.71g/100g	Aspartic acid	10.53
Crude fibers	8.81g/100g	Glutamic acid	12.61
Fats	5.54g/100g	Glycine	3.41
Proteins (g/100g)		Histidine	4.11
Albumins	25.90	Isoleucine	3.17
Globulins	62.56	Leucine	7.61
Glutelins	6.34	Lysine	6.12
Prolamines	5.20	Methionine	0.96
Essential minerals		Phenylalanine	4.83
Micro-minerals (mg/ 100g)		Proline	3.43
Copper	2.44	Serine	3.13
Iron	11.60	Threonine	2.72
Manganese	4.23	Tyrosine	3.05
Zinc	8.44	Valine	5.94
Macro-minerals (mg/ 100g)		Fattyacids (%)	
Calcium	464.14	Linoleic acid	27.33
Magnesium	290.71	Linolenic acid	9.19
Phosphorus	168.78	Oleic acid	22.40
Potassium	1397.68	Palmitic acid	25.23
Sodium	24.26	Palmitoleic acid	2.81
-----	-----	Stearic acid	9.60

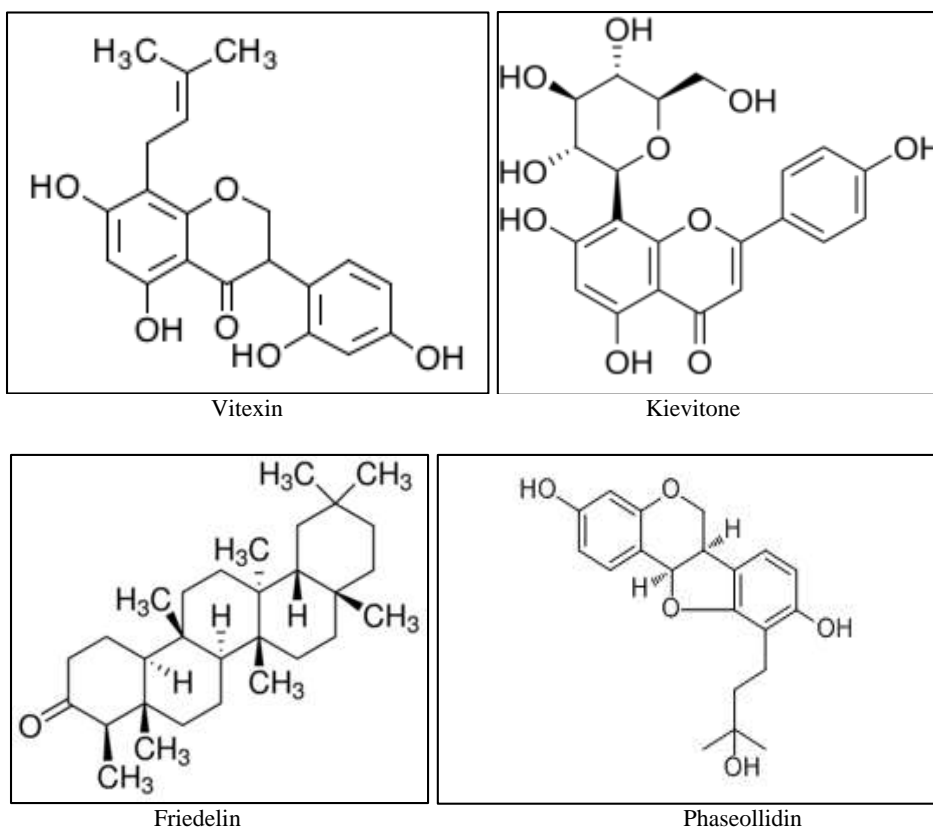
Phytoconstituents

Different secondary metabolites have been reported from various parts of *Vigna trilobata* as dalbergioidin, fats, fixed

oil, flavonoids, glycosides, isovitexin, kaempferol, kievitone, phaseollidin, quercetin, saponins, sterols, tannins, terpenoids and vitexin [6-8].

Table 3: Pharmacological activities

Part	Extract	Pharmacological activity
Leaves	Aqueous	Sedative [9]
	Methanol	Antiemetic [10]
Root	Methanol, aqueous	Antiemetic [11]
Root	Methanol	Antidiabetic [6]
Seeds	Methanol, aqueous	Hepatoprotective, antioxidant [12, 13]
Stem	Petroleum ether, methanol	Antimicrobial [14]
Whole Plant	Methanol	Antitussive [15]
Whole Plant	-----	Anti-inflammatory [16]

Chemical structures of some phytoconstituents of *Vigna trilobata* [1]

Conclusion

Medicinal uses, phytochemistry and pharmacology of *Vigna trilobata* presented in this review could be helpful for future studies and research. The plant has good future prospective for the discovery of new molecules and pharmacological activities.

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