

## MICRO-REVIEW

**Review on Phytochemical and Pharmacological Aspects of  
*Dolichos biflorus* Linn**

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*Dolichos biflorus* Linn. (Leguminosae) is an important medicinal plant which finds uses in Ayurveda and Unani systems of medicine especially for removing kidney stones. It has diuretic and emmenagogue effects. An attempt has been made to review the phytochemical, pharmacological and antimicrobial works done on this plant.

**Key Words:** Review, *Dolichos biflorus* Linn, Phytochemical and pharmacological properties.

## INTRODUCTION

*Dolichos* is a well known and widespread genus of twining herbs of the family Leguminosae (Papilionaceae) occurring mainly in the tropical countries. It occurs all over India up to an altitude of 5000 ft. About 14 species occur in India, of which *D. biflorus* (Horse Gram), *D. lablab* (Bean), *D. catijang* (cow gram), *D. pruriens* (Cow hedge) and *D. soja* (Soya bean) are extensively cultivated and its seeds are used as food and leaves and stem as fodder. The seeds have been used in the indigenous system of medicine for a long time as astringent, anthelmintic, nerve tonic, diuretic, aphrodisiac and antipyretic etc. The plant is commonly known in *Hindi*: Kulthi; *Sanskrit*: Kulastha; *Bengali*: Kulti, Kurtikalai; *Marathi*: Kulith, Kulthi; *Gujarati*: Kulti; *Malayalam*: Kullu, Kollu; *Telugu*: Vlavalu; *Tamil*: Kollu.

**Morphology**

**Stems:** Very wide climbing slender, slightly pubescent, oblong blunt, subglabrescent leaflets on a petiole, lateral ones very unequal sided, stipulae minute and linear.

**Flowers:** 1–3 on very short pedicels in the axils of the leaves. Calyx slightly downy with upper teeth quite connate, the side lanceolate and the lowest one linear. Corolla yellow.

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**Pods:** Linear, sessile, nearly straight, glabrous, 6–8 seeded, tipped with a persistent style.

### Phytochemical Investigations

The seed has moisture, 11.8%; crude protein, 22.0%; fat, 0.5%; minerals, 3.1%; fibre, 5.3%; carbohydrates, 57.3%; calcium, 0.28%; phosphorus, 0.39%; iron, 0.0076%; nicotinic acid, 0.0015%; carotene, 119 IU/100 g, arginine 6.0–7.1%, tyrosine 6.68% and lysine 7.64%. Other important constituents of *D. biflorus* are streptogenin,  $\beta$ -sitosterol, bulbiformin, linoleic acid (in the seeds oil, 30–60%), polyphenols, oxalates (40% soluble) and crude fibre (5.3%)<sup>1-3</sup>. Pant *et al.*<sup>4</sup> found moisture 10.58%; ash, 3.86%; fat, 2.26% and crude protein, 21.35% in seeds. Mahadevappa *et al.*<sup>5</sup> reported palmitic acid, linoleic acid, oleic acid and linolenic acid in seed oil of *D. biflorus* L.

Mary *et al.*<sup>6</sup> isolated unusual enzyme allantoinase from germinated seeds of *D. biflorus* L. Seeds of *D. biflorus* L. contain total lipids 1.7–2.2%, neutral lipids 46–52% of total lipids, glycolipids 10–12% and phospholipids 35–40% of total lipids. Its amino acid composition is aspartic acid, lysine, phenyl-alanine, glycine, threonine, alanine, tyrosine, valine, glutamic acid, leucine, proline, serine and tryptophan. Seeds are rich source of ribonuclease. The glycosidases  $\beta$ -H-acetyl glucosaminidase,  $\alpha$ - and  $\beta$ -galactosidases,  $\alpha$ -mannosidase and  $\beta$ -glucosidase have been isolated and purified<sup>7</sup>. Singh, *et al.*<sup>8</sup> isolated phytohemagglutinin from the seeds and characterized by Kuehnemund *et al.*<sup>9</sup> as a glycoprotein of molecular weight about 130000 with amino acids and carbohydrates (0.5% galactose, 0.2% mannose, rhamnose and fructose).

Keen *et al.*<sup>10</sup> isolated genistein, 2'-hydroxy genistein, dalbergioidin, kievitone, phaseollidin and isoferrerin isoflavones after inoculation by some non-pathogenic bacteria, along with coumestrol and psoralidin from the leaves and stems of *D. biflorus* L. Ingham *et al.*<sup>11</sup> isolated two minor isoflavonoids dolichin A and B from the bacteria treated leaves of *D. biflorus* L.

Mitra *et al.*<sup>12</sup> isolated 5-hydroxy-7,3',4'-trimethoxy-8-methylisoflavone and 5-neohesperidoside isoflavone from the ethanolic extract of seeds of *D. biflorus* L. Akihisa, *et al.*<sup>13</sup> isolated and identified fourteen triterpene alcohols and one 3-oxosteroid: stigmastenone [(24R)-stigmast-4-en-3-one] from seeds of *D. biflorus* L.

Dubey *et al.*<sup>14</sup> identified D-glucose, D-galactose, L-rhamnose, D-arabinose and L-ascorbic acid along with amino acids, *viz.*, glycine, alanine, cysteine, serine and aspartic acid from seeds of *D. biflorus* L.

### Pharmacological Screening

The seeds are diuretic; emmenagogue; increase appetite; remove stone from kidney; cure hiccup, eye troubles, enlargement of the spleen, pain in the liver; improve the complexion; cause biliousness. The decoction is used in leucorrhoea and menstrual derangements.<sup>15</sup> Kamboj *et al.*<sup>16</sup> reported that no anti-implantation activity at a dose of 200 mg/kg on days 1–7 post-coitum in rats for the petroleum ether, alcohol and aqueous extracts of seeds of *D. biflorus* L.

Laskar *et al.*<sup>17</sup> found antihepatotoxic activity in seeds of *D. biflorus* L. against paracetamol intoxicated rats at a dose of 10 mg/kg.

### Antimicrobial Screening

Basak *et al.*<sup>18</sup> found antibacterial activity against *Pseudomonas aeruginosa*, *Escherichia coli*, *proteus vulgaris* and *Bacillus subtilis* in methanolic extract of seeds of *D. biflorus* L.

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