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## AN OVERVIEW ON *MARTYNIA ANNUA* L.

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### ABSTRACT

*Much of the wealth of a country resides in its plant inheritance, whether the plants are endemic, naturalized or recent introductions. Plants have played an important role as various medicinal agents since ages. The use of plants to treat illness is found throughout human culture. Knowledge of plants has been handed down from generation to generation for thousands of years. Martynia annua (Martyniaceae) is an important medicinal plant found throughout tropical world as a weed. The plant is native to Mexico, Central America and naturalized in Indian sub continent. Though almost all of its parts are used in traditional systems of medicines includes leaves, seeds, fruits, roots etc. are the most important parts which are used medicinally. The present article gives an account of updated information on its photochemical and pharmacological properties. The review reveals that the plant possesses activities like anti-epileptic, anti-inflammatory, antiseptic, wound healing. The plant also used to treat menstrual disorders and snake bites.*

**KEYWORDS :** *Martynia annua, Martyniaceae, pharmacological properties, anti-epileptic and antiseptic*

### INTRODUCTION

India has a rich heritage of using medicinal plants<sup>1</sup>. Plants have played an important role as various medicinal agents since ages. Different parts of plants are used for medicinal purposes i.e., bulb, gel, leaves, roots, barks, peels etc. The use of plants to treat illness is found throughout human culture<sup>2</sup>. *Martynia annua* is also known as the 'Devil's claw' because of the 2-hooked form of their seed pods, a

member of family Martyniaceae, which is not a well-known family. It is Common in open waste places, native to Mexico, Central America and naturalized in Indian sub continent. Its excellent dispersal mechanism has helped it spread throughout the tropical world as a weed<sup>3</sup>. The genus and species were first described by Carl Linnaeus in his Species Plantarum. Houston names

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the plant *Martynia* in honor of John Martyn, a professor of botany at Cambridge<sup>4</sup>.



Figure 1: *Martynia annua* L.

**AIM AND OBJECTIVES:**

To highlight the therapeutic efficacy, importance and safety profile of *Martynia annua* L.

**VERNACULAR NAMES:** <sup>4,5</sup>

**Telugu:** Garuda Mukku.

**English:** Tiger's claw, Devil's claw.

**Hindi:** Hata Jori.

**Tamil:** Thael kodukkukai, Kaakkaa mookuchedi.

**Kannada:** Garuda mugu.

**Gujarati:** Vinchhoodo.

**Marathi:** Bhagnaka.

**Punjabi:** Kaktundi, Bichu, Hathajari.

**TAXONAVIGATION:** <sup>4,6,7</sup>

**Kingdom:** Plantae – (Plants)

**Subkingdom:** Tracheobionta – (Vascular plants)

**Super division:** Spermatophyta – (Seed plants)

**Division:** Magnoliophyta – (Flowering plants)

**Class:** Magnoliopsida – (Dicotyledons)

**Order:** Lamiales

**Family:** Martyniaceae

**Genus:** *Martynia*

**Species:** *M. annua*

**Binomial name:** *Martynia annua* L.

**SYNONYMS:** <sup>8-10</sup>

*Martynia diandra* Gloxn.,

*Carpoceras angulata* A.Rich.

*Disteira angulosa* (Lam.) Raf.,

*Carpoceras longiflora* A.Rich.,

*Martynia angulosa* Lam.,

*Vatkea diandra* (Gloxin) O.Hoffm.,

*Martynia fragrans* Lindl.,

*Martynia proboscidea* Gloxin.,

*Martynia louisiana* Mill.,

*Martynia lutea* Lindl.,

**GENERAL DESCRIPTION:** <sup>5,11-17</sup>

*Martynia* is a monotypic genus in the Martyniaceae (family) consisting of a single species. *Martynia annua* is an herbaceous, erect, branched herb, up to 1.5 m tall. It is an introduced species originally from Mexico, now naturalized in Indian sub continent. It has been introduced as an ornamental to most of the warmer parts of the world. It was growing in the altitudinal of 250-1350 m. It was first recorded in New South Wales in 1920 at Warialda and was discovered at Katherine in the territory after Second World War.

**Habitat:** Common in disturbed areas such as roadsides, rubbish dumps, stockyards and around buildings.

**Soil pH:** 6.1- 7.8

**Sunlight:** Full sun

**Temperature:** Cold

**Stems:** The stems are succulent, green, robust, branched and covered with glandular hairs.

**Leaves:** The leaves are subcordate, 7-15 cm long, 7-20 cm broad, arranged in opposite pairs and having 5-7 shallow lobes. Glandular hairs exude a slimy sap. Petiole is slightly shorter than or as long as the lamina.

**Flowers:** The flowers are borne in small clusters near the tips of the branches, tubular shaped 4-6 cm long, yellow and red colored flowers which terminate in 5 spreading lobes with a prominent spot between each lobe.

**Fruits:** The fruits are oblong, green and fleshy when young, becoming black and woody when matured, 3-4cm long and 1-1.5 cm wide with 2 sharp recurved hooks.

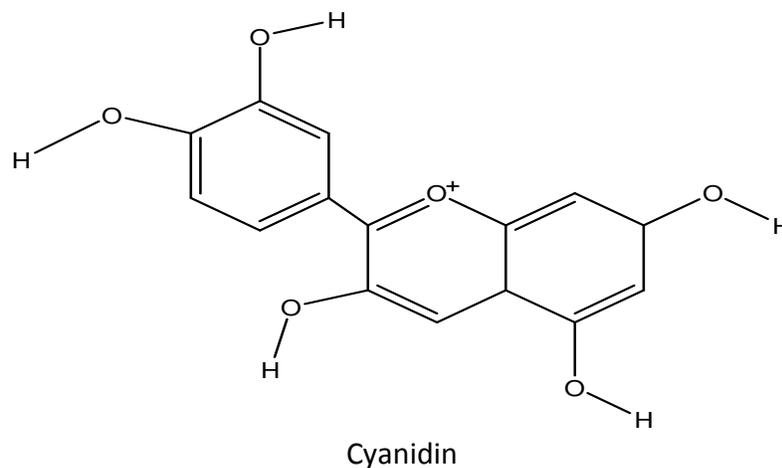
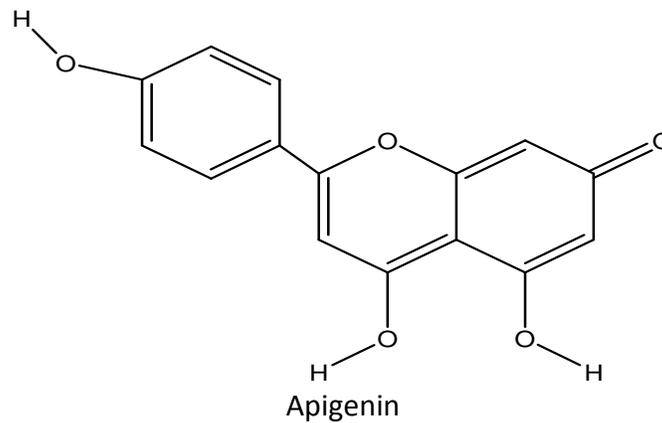
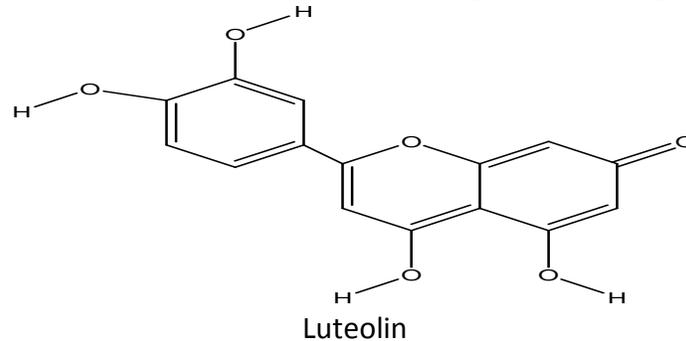
**Seeds:** The seeds are flat, brown to black color, elongated. Each pod contains two seeds, usually remaining inside the pod.

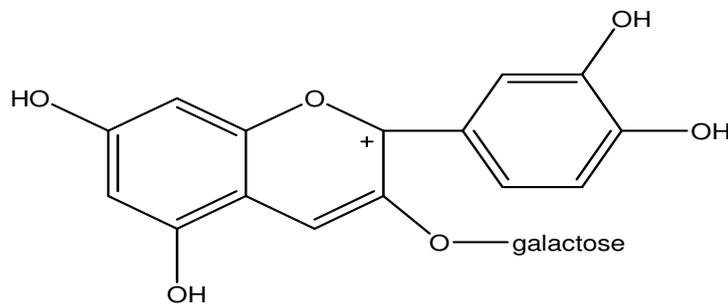
**Propagation:** It is propagated by seed propagation method which remains inside the pod and attaches itself by its spines to vehicles, machinery, animals and humans.

**Flowering and fruiting:** Aug.-Sept.

**PROPERTIES AND ACTIONS OF SEED:****Rasa:** Madhura**Guna:** Sita**Virya:** Sita**Vipaka:** Madhura**Karma:** Pittaghna, Dardhyakara, Rasayana**Important formulations of seed:** Avaleha, Tryushanadi ghrita, Cyavanprasa**Therapeutic uses:** Palita**Dose:** 2-5 g.**CHEMICAL CONSTITUENTS:**<sup>5, 13, 18</sup>

The plant revealed the presence of terpenoids, alkaloids, glycosides, tannins, phenols, flavonoids, and leucanthocyanins. Flowers contain Cyanidin-3-galactoside, p-hydroxy benzoic acid, snopic acid and gentisic acid. Seed contains fixed oil. Flowers also contain Luteolin, apigenin, cyanidin and pelargonidin-3-5-diglucoside.





Cyanidin-3-galactose

**TRADITIONAL USES:**<sup>5, 18</sup>

**Plant-** Scorpion sting, entire plant used to treat menstrual disorders

**Leaf-** Antiseptic, anti-epileptic agent and applied to tuberculous glands of the neck.

**Leaf paste-** Used in wounds

**Juice-** Used in Sore throat

**Seed-** stimulates the cardiovascular and respiratory systems. It has effect on a nictating membrane.

**Seed oil-** Used in itching and abscess

**Fruit-** Used in inflammations

**Nut paste-** Used in Bites of venomous insects

**Roots-** Used in snake bites

**RECENT DEVELOPMENTS IN THE RESEARCH AREA OF MARTYNIA ANNUA:**

**Negi R.S.** et al conducted study on Ethno-medicinal studies at sanchar and mount abu regions, located in Sirohi district of Rajasthan; they concluded that fruit inhaled cures hysteria. *Martynia annua* used in Pneumonia, cold fever, scabies, eczema, allergy, antidote. Root and inflorescence used in stomachache menstrual disorder and eczema.<sup>1</sup>

**Sermakkani M.** et al conducted study on Phytochemical and antibacterial activity of *Martynia annua* L. against the different pathogenic bacteria; in phytochemical evaluation they found that higher amount of terpenoid, alkaloids, glycosides, steroids, tannins and saponins and moderate quantity of cardiac glycosides, phenols and anthroquinones. Finally they concluded that due to presence of tannins and phenols in the extracts could be responsible for the antibacterial activity.<sup>19</sup>

**R. Vijay Kumar** et al conducted study on Antioxidant - The maximum expressed activity

among 63 medicinal plants; in their review revealed that *M.annua* has anti fertility and anti bacterial activity.<sup>20</sup>

**Suresh Kumar** et al conducted study on Plants and plant products with potential anticonvulsant activity – a review; in their review revealed that methanolic extract of leaves at 200 or 400 mg/kg b.w show good anticonvulsant activity.<sup>21</sup>

**Ifeanyi P. O.** et al conducted study, the potentiality of medicinal plants as the source of the new contraceptive principles in males; In their review revealed that the ethanolic extracts of roots of *M.annua* in male rats at 100 and 200 mg/kg b.w for 60 days caused Leyding cell atrophy and significant reduction in the serum concentration of testosterone and LH.<sup>22</sup>

**B. Harish Babu** et al conducted study on Wound healing activity of methanolic extract of *Martynia annua* L. (Martyniaceae); they revealed that presence of flavonoids are one of important phytoconstituents responsible for wound healing activity.<sup>23</sup>

**Harish Babu. B** et al., conducted Studies on phytochemical and anticonvulsant property of *Martyniya annua* L; they concluded that methanolic extracts *Martynia annua* showed anticonvulsant activity against Maximal Electro shock and Pentylenetetrazole animal models.<sup>24</sup>

**Singhai AK** et al., conducted studies on Preliminary pharmacological evaluation of *Martynia annua* Linn leaves for wound healing; they concluded that fraction MAF-C from ethanol extract of *Martynia annua* leaves are found most effective in wound healing.<sup>25</sup>

**Nagda Dhruiti** et al., conducted studies on Antioxidant activities of methanolic and aqueous extracts from leaves of *Martynia annua* Linn; this

study suggests that *Martynia annua* leaf is a good source of natural antioxidants.<sup>26</sup>

**Mali PC** et al., conducted studies on Antifertility effect of chronically administered *Martynia annua* root extract on male rats; this study is concluded that the 50% ethanol extract of *M. annua* root produced dose related effects on male reproduction without altering general body metabolism.<sup>27</sup>

**Nandy Subhangkar** et al., conducted studies on phytochemical and pharmacognostical studies of *Martynia annua* plant; they reported all the pharmacognostical characters and physico-chemical parameters have been reported for the first time.<sup>28</sup>

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