wjpmr, 2023, 9(9), 40-49

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Review Article

ISSN 2455-3301

WJPMR

A REVIEW STUDY OF ETHNOBOTANY OF KAKNASA *(MARTYNIA DIANDRA GLOX.)*

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Article Received on 25/06/2023 **Article Revised on 15/07/2023** **Article Accepted on 04/08/2023**

ABSTRACT

Ayurveda, a medicinal plant based traditional Indian Medicine system plays an important role in health care today to world population as an alternative and contemporary medicine. India is known as the "Emporium of Medicinal plants" due to abundance of several thousands of medicinal plants in the different bioclimatic zones. Martynia diandra, locally known as "*Vinchchuda*" (English name - "Devil's claw"), Family- Martyniaceae, has a diverse pharmacological and phytochemical properties. Martynia diandra Glox., is a small herbaceous annual medicinal plant, a native of Mexico, however, found throughout India. In Ayurveda, Martynia diandra Glox. is known as *"kakanasika"*. The entire plant contains biologically active constituents such as luteolin, flavonoids and phenolic compounds that have been reported to show potentially significant pharmacological activities. Therefore, the herb is widely used in traditional systems of medicines. However, the studies of the pharmacological activities are inadequate and further research is required for the determination of the therapeutic benefits as well as the toxic effects of the plant. The aim of this review article is to gather and summarize the information related to Pharmacognostical, ethnobotanical, phytochemical, traditional and pharmacological activities of Martynia diandra Glox.

KEYWORDS: Kaknasika, Vinchchuda, Pharmacognosy, Ethnobotany, Phytochemistry, Pharmacology.

I. INTRODUCTION

Since past several decades, the indigenous and traditional system of treatment has gained much importance over the modern system of medicine due to its effective and economic treatment without any side effects. Modern drugs may have severe side effects, but herbal drugs ensure safety and efficacy. In order to make sure the safe use of these medicines, the first step necessary is to review the whole plant for its potential as a medicinal plant. Materia medica of India provides lots of information on the folklore practices and traditional aspects of therapeutically important natural products. Martynia diandra Glox., known as "Kaknasa" in Ayurveda and locally known as "*Vinchchuda*" (English name "Devil's claw"), is a small herbaceous annual medicinal plant found throughout India. The entire plant have been used for many therapeutic indications like analgesic, anti-inflammatory, wound healing, antifertility, anti-oxidant, anti-diabetic, etc., The evaluation of the therapeutic properties of the drugs is mostly based on Pharmacognostical, Phytochemical and Pharmacological investigations.

II. MATERIAL AND METHODS

Information obtained about *Martynia diandra Glox.* from classical textbooks as well as Research papers published on *Martynia diandra Glox.* were collected from world wide web.

III. CLASSICAL REVIEW

A. In Brihatrayi

1. Charaka Samhita

Acharya *Charaka* has mentioned *Kakanasa in Madhur skandha*[4], *It is* an ingredients of *Chyavanprashavaleha* for Rasayan Karma[4], *Tryushnadi Ghrita* for *Kasa Rog*[5], *Dhupan Dravya* for *Apasmara Rog*[6] and *Baladi yamak sneha* for *Yoni roga chikitsa.*[7]

2. Sushruta Samhita

Acharya *Sushruta* has mentioned *Kakanasa* in madhur varga and *Anuvasan Vasti Dravya* along with other drugs.[8]

B. In Nighantus

1. Dhanwantari Nighantu

This is one of the most authentic texts of *Dravyaguna* written in 10th century A.D. In this text Author has

categorised this plant in *Karveeradi Varga* and it is said to have *Tikta Rasa, Ushna Virya* and is used for Purification of wound (External use), constipation and its fruits are used for preparation of oil. *In Dhanwantari Nighantu, synonyms of Kakanasa are –*[9]

काकनासा ध्वान्क्षनासा काकतुण्डफ़ला च सा।

सुरङ्गी तस्करस्नायुर्ध्वाक्ष तुन्डफ़ला मता।।

काकनासा

ध्वान्क्षनासा

काकतुण्डफ़ला

सुरङ्गी

तस्करस्नायु

ध्वाङ्क्षतुन्डफ़ला

2. Kaidev Nighantu

This is one of the most authentic texts of *Dravyaguna* written in 14th century A.D. In this text, Author has categorised this plant in Aushadhi Varga and *Kakanasa* has been constituted to have Kashaya (Astringent), Tikta (Bitter), Katu (Pungent) Rasa, has katu vipaka and has Ushna Virya. It is used in Shotha, Rakta Vikar, Switra, Kushtha, Kaphaj Vikar and it also used for emetic purposes.[10]

काकस्यसस्या काकाङ्गी चोर्स्नायु शिरोबला। काकस्यसस्या

काकाङ्गी

चोर्स्नायु

शिरोबला।

3. Bhavprakash Nighantu.

This is one of the most authentic texts of *Dravyaguna* written in 16th century A.D. In this text Author has categorised this plant in *Guduchiyadi Varga* and it has katu, tikta, kashay rasa, ushna virya and katu vipaka. It is kaphashamak, vaman, shothhar, arsha and kushthahar. According *Acharya* Fruit paste of *Martynia diandra Glox* is used in scorpion Bite by Local use and Oil prepared by Fruits is used in various Skin Disorders by Local application and Leaf paste is used in *Apachi* by Local application. In Bhavprakash Nighantu, it is known as.[11]

काकनासा तु काकाङ्गी काकतुन्डफ़ला च सा।

काकनासा,

काकाङ्गी,

काकतुन्डफ़ला

4. Raj Nighantu.

This is one of the most authentic texts of *Dravyaguna* written in 17th century A.D. In this text author has categorised this plant in *Guduchiyadi Varga*. It is constituted by *Madhur Rasa, Sheet Virya*. It is used in *Pittaj Vikar*, Greying of Hairs and also used as *Rasayana*. *In Raj Nighantu, it is known as.*[12]

काकनासा ध्वान्क्षनासा काकतुण्डफ़ला च वायसी।

सुरङ्गी तस्करस्नायुर्ध्वाक्ष तुन्डफ़ला सुनासिका ।।

काकनासा

ध्वान्क्षनासा

काकतुण्डफ़ला

वायसी

सुरङ्गी

तस्करस्नायुर्ध्वाक्ष

तुन्डफ़ला

सुनासिका

5. Adarsha Nighantu

In this text author has categorised this herb in *Arkadi Varga*. According to *Acharya Vapalal Vaidya Kakanasa* is a controversial drug, Fruit of *Kakanasa* Should be resemblance with Beak of crow but *Martynia diandra Glox* has *Trikantak* (3 hooks) in shape and *Trikantak* is synonym given to *Gokshur* in ayurvedic literature so according to him due to its shape it should be considered as original *Gokshura*. *In Aadarsha Nighantu, it is known as.*[13]

काकनासा

काकतुन्डफ़ला

सुनासिका

आकाशपुष्पी

पं- अम्बरबेल

गु – कौंवादौड़ी,शींगरोटी

Classical reviews According to Nighantus are summarized below in Table 1.

Table 1.

Sr. NO.	Name of Nighantus	Synonyms	Rasa Panchak	References
1.	***Dhanwantari Nighantu*** [10th century A.D]	**काकनासा** **ध्वान्क्षनासा** **काकतुण्डफ़ला** **सुरङ्गी** **तस्करस्नायु** **ध्वाङ्क्षतुन्डफ़ला**	Rasa – Tikta Virya - Ushna	9

2.	***Kaidev Nighantu*** [14th century A.D.]	**काकाङ्गी चोर्स्नायु शिरोबला।**	Rasa – Katu, Tikta, Kashay Virya-Ushna Vipaka- Katu	10
3.	***Bhavprakash Nighantu.*** [16th century A.D.]	**काकनासा, काकाङ्गी, काकतुन्डफ़ला**	Rasa-Katu, Tikta, Kashay Virya – Ushna Vipaka- Katu	11
4	***Raj Nighantu*** [17th century A.D.]	***काकनासा ध्वान्क्षनासा काकतुण्डफ़ला वायसी सुरङ्गी तस्करस्नायुर्ध्वाक्ष तुन्डफ़ला सुनासिका***	Rasa-Madhur Virya - Sheet	12
5.	***Adarsha Nighantu:***	***काकनासा काकतुन्डफ़ला सुनासिका आकाशपुष्पी पं॰ अम्बरबेल गु॰-कौंवादौड़ी,शींगरोटी***		13

C. In the Ayurvedic Pharmacopoeia of India[API]

In the Ayurvedic Pharmacopoeia of India Kakanasa consists of dried seed of Martynia diandra Glox, an annual herb found throughout the country in waste places. It has madhur rasa, sheet virya, madhur vipaka and pittaghna, dardhyakara, rasayan.[22]

IV. PHARMACOGNOSTICAL REVIEW

SYNONYMS

- *Martynia Annua Linn.*
- *Martynia angulosa Lam.*
- *Martynia proboxidea Glox*
- *Carpoceras longiflora A.*
- *Disteira angulosa (Lam).*
- *Proboscidea cordifolia moench*

Vernacular Names[11]

- English: Devil's claw, Tiger's claw, shanke's Head;
- Hindi, Punjabi, Urdu: Hathajori, Bichu;
- Gujarati: Vichchida;
- Marathi: Vinchu;
- Tamil - Thelkodukkukkay; Pulinagam;
- Malayalam: Puli– Nakam;
- Telugu: Garudamukku,Telukondicchhettu;
- Konkani: Shernui;
- Bengali: Bagbnoki.

MORPHOLOGY[18,20,29]

Martynia diandra Glox., Family: Martyniaceae, is native of Mexico and It is also found throughout India, in rubbish heaps, waster places and road sides. It is a small herbaceous annual, branched, erect, glandular, hairy, Diandral growing herb upto 0.9-1.2 m in height.

Stems: green, robust, branched and covered with glandular hairs. Flowers are drooping, large, pale mauve or lavender in short spikes at the end of branches. They are tubular shaped 4-6 cm long, pink and dark purple blotched with yellow inside, foxglove shaped, ill-smelling and terminate in 5 spreading lobes with a prominent spot between each lobe.

Leaves: large, simple, opposite, green in colour, broadly ovate to triangular-ovate, glandular hairy, 9–22 × 9–20 cm, cordate at base with sinoulate-dentate margin and acute apex, sticky as often covered with glutinous dew-like substance. Glandular hairs exude a slimy sap which gives the plant a clammy feel.

Flowers: Flowers are purplish white, bell shaped with dim purple markings. Pedicels 1– 2 cm long, thickening and recurved. Calyx is around 15-20 mm long. Corolla is around 55-65 mm, tube around 35-45 mm long. Corolla is pipe shaped campanulate, spotted on the inward surface, the spots yellow, pink or purple. Stamens are two.

Fruits: oblong, green and fleshy when young, becoming black and woody when mature, 3-4 cm long, 1-1.5 cm wide tapering into a long beak (claw), which splits into two sharp re-curved hooks when dry. Claws are shorter than the body of the fruit.

Seeds: Seeds are flat, blackish brown and elongated, two seeds present in each pod, usually remaining inside the pod. Racemes are long, erect and terminal.

Root: Roots of Martynia diandra shows cylindrical and slightly tapering shape. Colour of the unpeeled root is yellowish brown to dark brown with rough surface and peeled root is pale yellow in colour.

The scientific classification[14]
Kingdom: Plantae
Division: Magnoliophyta
Class: Angiosperms
Order: Lamiales
Family: Martyniaceae
Genus: Martynia
Species: *Martynia Diandra*

Pictures of Flower and Fruit of *Martynia Diandra*


Aerial part of *Martynia Diandra*

Microscopic study[2]
Seed oblong, hard, woody, 2-5 cm long and 1.5-1.7 cm wide surface wrinkled, light brown to black; two sharp recurved hooks present at anterior end; four prominent grooves present each on convex and concave side and on lateral sides, 2-4 hairy spines present inside groove on concave side; no taste and odour.[2]

PHYTOCHEMISTRY
Phytoconstituents are defined as the bioactive chemical compounds which are responsible for the pharmacological activity of herbs. They also offer protection to plants from predators. They are also responsible for the morphological characteristics of a plant. Various therapeutic indications of *Martynia* are due to the presence of primary metabolites like carbohydrates, amino acids, proteins and chlorophylls and also due to secondary metabolites like alkaloids, saponins, steroids, flavonoids, tannins, etc.[1,3]

The higher percentage (69%) of phytochemical constituents was present in the methanolic extract of *M. Diandra*. The phytoconstituents present in different parts of *M. Diandra* are summarized in Table 2 below.

Table 2.

Sr. No.	Parts of the plant	Phytoconstituents	Reference
1	Flowers	Cyanidin 3- galactoside, p-Hydroxy benzoic acid, Snapic acid, Gentisic acid.	15
2	Leaves	Chlorogenic acid, Fatty acid [Palmitic acid, Stearic acid, Arachidic acid], p-Hydroxy benzoic acid, Snapic acid.	15
3	Seeds	Arachidic acid, Linoleic acid, Malvolic acid, Oleic acid, Palmitic acid, Stearic acid, Apigenin and Apigenin-7-O-beta Glucuronide.	17
4	Fruits	Gentisic acid, Fatty acids [Palmitic acid, Stearic acid, Linolic acid, Oleic acid].	15
5	Whole plant, Flowers	Pelargonidin-3,5-diglucoside Cyanidin-3-galactoside	22
6	Whole plant, Seed	Oleic acid Apigenin, Apigenin-7-O-beta- D- glucuronide	22

V. ETHNOMEDICINAL IMPORTANCE OF PLANT

The ethnomedicinal use of the plant is recorded from local practitioners by taking interview and simple talk with them. The fruit is used as medicine.

Local Use: A ripened fruit rubbed on a special stone and made into paste. The paste used to cure the pneumonia in childrens.[11]

Recorded Uses: The plant is used in boils, eczema, epilepsy, hair fall, itch, neck pain, scabies, sore throat, tonsillitis, vet wounds (S.K. Jain. 2012). The fruit is used as anti-inflammatory and in scorpion sting. The roots are used in urinary disorders like dysuria etc. The leaves are used in epilepsy.[23]

Ethnobotanical information on *Martynia diandra*-

The paste of the leaves is used to treat tuberculous glands, venomous stings and epilepsy. Its juice is used for gargling. Additionally, leaves are consumed in the treatment of scabies, tuberculosis, sore throat and neck cancer. Fruit paste is utilized as alexiteric and in the treatment of inflammatory conditions and scorpion stings. Fruit oil is used in the treatment of scabies, eczema and Tinea corporis. Root extract is used in the treatment of sedation, rheumatism, infertility and cancer. For asthmatic irritation, seed powder is used. Its seed oil is reported to have good iodine value, which is applied to treat itching and skin infections. It is also used for arresting grey hair.[2, 8, 9]

A detailed view of the ethnomedicinal uses of different parts of the plant is given in **Table 3** below.

Ethnobotanical information on *Martynia diandra.*

Table 3.

Sr. No.	Traditional uses	Plant part	Preparation	Reference
1	Antidote to venomous stings	Leaves	Paste	30
2	Scorpian stings	Fruit	Paste	25
3	Antifertility	Root	Extract	30
4	Alexiteric	Fruit	Paste	27
5	Applied to tuberculous Glands	Leaves	Paste	27
6	Epilepsy	Leaves	Paste	23
7	Gargle	Leaves	Paste	27
8	Inflammations	Fruit	Paste	27
9	Scabies	Ripe Fruit	Oil	29
10	Scabies	Leaves	Whole	23
11	Sedative	Root	Paste	29
12	*Tinea corporis*	fruit	Oil	29
13	To kill bugs	Leaves	As such	29
14	Epilepsy	Leaves	Paste	23
15	Cancer & Rheumatism	Root	Paste	26
16	Neck cancer	Leaves	whole	30
17	Treatment of Tuberculosis & sore throat	Leaves & Roots	whole	33
18	Eczema	Fruit oil	Oil for local application	34
19	*Asthma*, Itching (Seeds) & Eczema(fruits)	Seeds & fruits	Powder	33
20	Tonic	Root	Boiled with milk	26

VI. PHARMACOLOGICAL IMPORTANCE

The plant has Analgesic and Antipyretic, Anthelmintic, Antibacterial, Anti-convulsant Antinociceptive and Central Nervous System (CNS) depressant, Antifertility, Antioxidant, Wound Healing, Antidiabetic, Gastroprotective, Antifungal and Cytotoxic Activity. The use of *Martynia diandra Glox.* as a medicine is fairly large which is tabled below at table 4.

Table 4.

S.NO.	Type of activity	Plant Part	Description	Reference number
1	Antibacterial activity	Leaves	The chloroform, ethyl acetate and methanol extract of *Martynia annua* L. leaves were studied on gram positive and gram negative bacteria for antibacterial activity. The extracts show antibacterial action for different bacteria. Chloroform extract showed higher antibacterial activity against *Proteus vulgaris, Bacillus subtilis* and *B. thuringensis*. Ethyl acetate extract was potentially effective against *Proteus mirabilis, P. vulgaris, Klebsiella pneumonia and Salmonella paratyphi AandB* while the methanol extract, shows greater antibacterial potential towards *Proteus vulgaris, B. subtilis, S. paratyphi B* and *Pseudomonas aeruginosa*. By Disc Diffusion method, antibacterial activity was carried out.	24
2	Antifertility activity	Root	The antifertility effect of 50% ethanol extract of *Martynia annua* L. root on male rates at dose of 50, 100 and 200 mg/kg body weight were studied. The result revealed significant decreases in the weights of testes, epididymitis, seminal vesicle and ventral prostate on male rats. Moreover, the antifertility effect was found dose dependent without changing general body metabolism.	28
3	Antioxidant activity	Leaves	The antioxidant activity of aqueous and methanol extract of *Martynia annua* L. leaves were studied by in vitro methods, namely, reducing power assay, DPPH radical-scavenging activity, nitric oxide scavenging activity, H2O2 radical scavenging activity, superoxide radical scavenging assay, hydroxyl radical-scavenging activity, and total antioxidant capacity. The higher antioxidant activity was found in methanolic extract compared to aqueous extract (Nagda *et al.*, 2009).	39,40
4	Antioxidant activity	Fruit oil	Rameshroo et al. reported in vitro antioxidant activity of *M. annua* from its fruit oil. Superoxide radical and DPPH radical methods were used for assessing antioxidant effect where IC50 being 87.56 µg/ml and 106.80 µg/ml correspondingly. Fruit oil exhebits 87.25 ± 1.13 mg per 100 grams of total polyphenol substance. As per the study report it is a prospective source of natural antioxidants.	41
5	Wound Healing activity	Leaves	The wound healing effect was studied by methanol fraction of ethanolic extract of *Martynia annua* L. leaves shows significant by stimulating of wound contraction and epithelialization as well. Moreover the phytochemical studies was tested and evaluated that the methanol fraction mainly contains flavonoid, luteolin which were responsible for enhancement of wound healing process by the free radical scavenging mechanism (Lodhi and Singhai, 2011; Dhingra et al., 2013).	34
6	Anti-diabetic Activity	Flower	The antidiabetic activity of methanol extracts of *Martynia annua* L. flower in induced diabetic Wistar rats which induced by streptozotocin (STZ) and Streptozotocin- Nicotinamide (STZ-NIC). The extract showed tremendous reductions in blood glucose, triglyceride and glycosylated haemoglobin levels and showed the increased HDL levels in diabetic rats (after 21 days). A result discovered that the extract exhibited good antidiabetic activity in STZ and STZ-NIC which induced diabetic rats (Kenwat et al., 2013).	23
7	Gastro-protective Activity	Leaves	The gastroprotective activity of methonolic extract of Martynia annua L. leaves in rats with 200 mg/kg and 300 mg/kg body	35

			weight on ethanol-induced gastric ulcer. Results were observed by calculating ulcer index based on lesion index and pH which showed significant inhibition on the ulcer lesion index in rats hence effect of ethanol extract with 300 mg/kg dose significantly ($p<0.05$) change the gastric volume, ulcer index, and pH.	
8	Antinociceptive activity and Central Nervous System (CNS) depressant activity	Root	The antinociceptive and CNS depressant activity petroleum ether, ethyl acetate and methanol extracts of *Martynia annua* L. root were studied. Amongst all extracts petroleum ether extract showed significant increase in reaction time by doing hot plate method and also showed more inhibitory effect on standard drug pentazocine and paracetamol and writhing induced by acetic acid against all extracts. The petroleum ether extract at 50 mg/kg dose showed significant decrease in the locomotor activity when they were compared with standard drug diazepam. At the dose of 30 mg/kg, it potentiates pentobarbitone sodium induced sleeping time up to 215.34% (Bhalke and Jadav, 2009).	30
9	Anti-convulsant activity	Leaves	The anticonvulsant activity was by methanol extract of *Martynia annua* L. leaves at doses of 200 mg/kg and 400 mg/kg. The doses were significantly reduced the duration of tonic hind leg extension and protect the animals from seizures. The methanol extract of *M. annua* 200 mg per kg and 400 mg per kg have revealed 66.31 % and 82.73% protection respectively against to maxima electroshock induced seizures. For these comparisons, the standard drug phenytoin (100%) was taken. While form the comparison with the standard drug diazepam (100%) the extracts 200 mg/kg and 400 mg/kg have also shown 70.33% and 82.88% protection of convulsion and 83.33% and 100% protection of mortality respectively against pentylenetetrazol (PTZ) which induced epilepsy. However, the anticonvulsant activity of methanol extract of *Martynia annua* L. was due to the potentiation of neurotransmitter in brain (Babu *et al.*, 2010).	19
10	Analgesic and Antipyretic Activity	Fruit	The analgesic activity was carried out by petroleum ether, chloroform, ethanol and aqueous extracts of *Martynia annua* Linn. fruits on Swiss albino mice using hot plate and tail flick methods and for antipyretic effect against brewers-yeast-influenced hyperpyrexia in adult Wister rats. The all extract had shown significant analgesic and antipyretic activity at 20 mg/kg. It was also observed that the petroleum ether and chloroform extracts exhibits greater analgesic and antipyretic activities as compared to ethanol and aqueous fruit extract of the plant (Kar *et al*, 2007).	37
11	Antifungal activity	Leaves	Fourteen coastal sand dune plants (CSDPs) belonging to nine families were screened for AM beach and the results obtained suggest that, all fourteen plant species belonging to nine different families were colonized by AM fungil. CSDPs which exhibited 50-75% AM fungal colonization are viz., I. pes-caprae (Kalamb beach), Panicum spp 2, S. portulacastrum, S. rhombifolia, T. procumbens etc. Whereas, CSDPs viz., C. rotundus, E. prostrata, E. zeylanica var. zeylanica, Hedyotis spp., I. pes-caprae (Arnala beach), L. procumbens, M. annula, Panicum spp 1, P. punctatum, and S. orientale etc. showed more than 80% AM fungal colonization.	22
12	Antihelminthic activity	Roots	The antihelmintic activity against earthworms *Pheritima posthuma* was investigated by petroleum ether extract of *Martynia annua* Linn. roots showed effective result compared with the reference drug albendazole (Nirmal *et al*, 2007).	31
13	Anticancer activity	Root	Aqueous & ethanolic extract of Martynia annua root had shown high anticancer activity with GI50 value 11.3µg/ml and 20.4µg/ml respectively on human leukemia cell line K-562 but for human breast cancer cell line MCF-7, human lung cancer cell	29

			line A-549, human squamous cell carcinoma SCC-40 and human cervical cancer cell line SiHa the extracts showed activity in more than 80µg/ml.	
14	Cytotoxic activity	Leaves	Cytotoxic activity of alcoholic and acetone extracts of *M. annua* was studied by J. Vinnarasi et al (2014) in terms of brine shrimp lethality bioassay. The alcoholic and acetone extracts of *M. annua* was observed to be mainly effective at which half mortality of brine shrimp nauplii occurred were found to be 239.48 and 328.21ppm respectively. The results of the study revealed the cytotoxic Potential of *M.annua*.(J.Vinnarasi et al, 2014)	42

VII. DISCUSSION

Martynia diandra Glox. belongs to the family Martyniaceae, which is widely grown plant throughout India and has many valuable medicinal properties. Our Literature review revealed that, so far, very less research work has been done on this versatile plant. The plant has been used as Analgesic and Antipyretic, Anthelmintic, Antibacterial, Anti-convulsant Antinociceptive and Central Nervous System (CNS) depressant, Anticancer, Antifertility, Antioxidant, Wound Healing, Antidiabetic, Gastroprotective, Antifungal and Cytotoxic Activity. According to Adarsh Nighantu; Martinia Diandra Glox. also has a strong diuretic property. As per Aacharya Bapalal Vaidya, the fruit of "Kakanasa" has a resemblance of a beak of crow, however, "*Martynia diandra*" seed is trikantak (3 hooks) in shape just like hoof of cow. "Trikantak" is the synonym given to Gokshuru in ayurvedic literature. The fruit of "Kaknasa" has cleft like cow's hoof and has 3 hooks. Hence Acharya Bapalal was of strong opinion that in the real sense of the term, "Kaknasa" should be the real Gokshuru. As Gokhuru has a strong Diuretic properties, thus, "*Martynia diandra*" as "Kaknasa" should also possess the diuretic properties.

The evaluation of the therapeutic properties of the drugs is mostly based on Pharmacognostical, Phytochemical and Pharmacological investigations. Classical reviews according to Nighantus are summarized in Table 1 above, the phytoconstituents present in different parts of *M. Diandra* are summarized in Table 2, ethnomedicinal uses of different parts of the plant is given in Table 3**,** the Pharmacological activities of *Martynia diandra Glox., which* is fairly large in number, some activities are summarized in table 4.

This herb is widely used in traditional systems of medicines. However, the studies of these pharmacological activities are inadequate and further research is required for the determination of the therapeutic benefits as well as the toxic effects of the plant.

VIII. CONCLUSION

Martynia diandra Glox., though, is an invasive obnoxious weed, the literature survey reveals the therapeutic efficiency of the plant. The phytochemicals isolated from this medicinal plant has been effectively being used in many health related issues since a long time. This herb is widely used in traditional systems of medicines, however, the studies of the pharmacological activities are inadequate and further research is required for the determination of the therapeutic benefits of the plant. In view of the wide-ranging medicinal value of Martynia dindra Glox. plant as described in Ayurvedic literature, it is imperative that more clinical and pharmacological trials are needed to investigate the unexploited potential of this plant. The present review work provides a wide area of interest for planning and conducting research on this wonderful plant for the development of novel drug for the future.

IX. ACKNOWLEDGEMENT: Nil.

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