

Crinum asiaticum Linn: A Medicinal Herb as Well as Ornamental Plant in Central India



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Abstract

The plant *Crinum asiaticum* Linn is well known traditional herb registered for its medicinal and for ornamental values found to be useful in plantation in homes, gardens etc. The plant is belonging to the family Amaryllidaceae. The present paper deals with the study of variation of different plant parts as per their growth. The study on its growth and vegetative propagation was done using its mature adventitious bulbs followed by proper water supply and other needed supply made for its successful growth and record on medicinal qualities based on available literatures.

It produces beautiful white flower. Leaves are also marked for its ornamental purpose. This plants mature mother bulb producing several new small adventitious bulbs around its body and are significantly used to propagate by vegetative modes. The plant includes much medicinal property and is used in multifold directions/purpose to treat varied disorders. Findings as their morphological variations and medicinal uses etc are discussed furthermore.

Keywords: Amaryllidaceae; Bulb; Herb; *Crinum asiaticum* Linn; Medicinal plant; Vegetative propagation

Introduction

Plant diversity is an important segment for biological diversity and is also useful for successful regulation of the ecosystem. Plants are performing as a important ingredients in nature and are used in multifold directions among the human beings. To sure their presences in nature for long to long time are producing numerous seeds. The dispersal modes of the seeds among the plants are also found in variable trends. Similarly the capacity of the seeds germination is also changeable among the plant population. All the plants in the nature are not equally capable to regenerate like their parental ones. Such types of the plants are well adapted for propagation by another mode known as vegetative propagation. Out of the large plant diversity some of the species are efficiently reproducing using their seeds as well as by the potential application of varied vegetative parts including the modified plant parts like bulb, tuber, rhizome, and corm etc.

Crinum asiaticum Linn requires moderate range of water with proper water removal facilities near the plants. Current paper focuses on the morphological variation of the plant and also is a record of its vegetative propagation using their bulbs separated from their mother bulb after of their maturation. Species diversity includes a great variety and complex association of a variety of species in certain ecological areas. This

plant diversity further playing a remarkable role in formation of biodiversity required for better regulation of life system in nature which plays a significant role for natural sustainability. Plants are important for a variety of purpose to the living beings such as these are a major source of food, fodder, fuel etc. Out of these the plants are also found to be a great source of medicine to treat certain disorders. The groups of the plants used for such purpose are marked as medicinal and aromatic plants. They are showing variation in their habit, habitat, growth form, nature of propagation mode etc.

Propagation of the plants is carried out by seeds or by vegetative plant parts. The process for plant propagation by potential application of seeds are termed as sexual propagation of the plants whereas the utilization of vegetative plant parts like root, stem, leaf or their modified forms like bulb, tuber, rhizome, corm etc. are categorized under the vegetative propagation. Both above modes of plant propagation leading to multiplication of the plants like their parental ones. Ecosystems composed with a great variation of species are more sustain than the ecological areas with less species diversity. Utilization of plants are also categorized in many ways like for food source, medicine etc. As per knowledge and potential of the plant species are utilized for varied purpose.

Plants always maintain their species richness in nature and for the same purpose these are producing numerous seeds of different colour, size, and shape etc. The period and potential of seed production by the plants also variable among the plant species. Plants are adapted to transfer their mature seeds from one place to another by various modes known as seed dispersal mechanism. The plants not capable to produce seeds are efficiently propagating by application of vegetative plant parts to develop new plants like their parental ones. Since long ago, natural products are showing considerable significance in term of beneficial products among the human society. Plants including several bioactive components showing efficiency as well as variation in their applicability to treat varied disorders. Amaryllidaceae is a widely spread family throughout the world containing 90 genera and 1310 species [1]. The family showing wide ranges of its distribution over the world. The paper deals with the Morphology, Propagation and ethno medicinal uses of *Crinum asiaticum* [2] studied *in vivo* Antinociceptive Activity of Leaf Extract of *Crinum asiaticum* and Phyto chemical Analysis of the Bioactive Fractions. Awatef et al. [3] recorded anti-inflammatory activity of *Crinum asiaticum* plant and its effect on bradykinin-induced contractions on isolated uterus. Ghosal [4] studied on alkaloids of *Crinum latifolium*. Nair [5] find out alkaloids from *Crinum acowanii* [6]. Reviewed on *Crinum asiaticum*.

Analgesic and anti-inflammatory effects of *Crinum asiaticum* leaf alcoholic extract in animal models was recorded by Rahman [7]. Chen et al. [8] made comprehensive study of alkaloids from *Crinum asiaticum*. Ghosal et al. [9] find out Latisoline, A Novel Gluco-alkaloid from *Crinum latifolium*. Pham [10] find out alkaloids from *Crinum amabile*. Refaat [11] studied *Crinum*: an endless source of bioactive principles: a review part 1-crinum alkaloids: lycorine-type alkaloids. Anti-inflammatory activity of *Crinum asiaticum* L and its effect on bradykinin-induced contraction on isolated uterus recorded by Samud [12]. Sun [13] analyzed on chemical constituents of *Crinum asiaticum* L. var. *sinicum* Baker and their Cyto toxic activities. Antibacterial, Antioxidant and Cytotoxic Properties of *Crinum asiaticum* Bulb Extract was studied by Rahman [14]. Anti nociceptive and anti-inflammatory effect of *Crinum asiaticum* bulb extract was noticed by Rahman et al. [15]. Anti candidal potential of *Crinum asiaticum* leaves extract against selected oral and vaginal *Candida* pathogens was examined by Surain, Aneja [16]. Sun 2008 recorded a new phenolic compound from *Crinum asiaticum* L. Chinese.

Fennell and Van [17] focused on *Crinum* species in traditional and modern medicine. Journal of Ethno pharmacology. Okpo et al. [18] recorded on Analgesic and anti-inflammatory activity of *Crinum glaucum* aqueous extract. Journal of Ethno pharmacology. Chemical constituents of Amaryllidaceae - ungeremine and criasbetaine, two antitumor alkaloids from *Crinum asiaticum* was assessed by Ghosal et al. [4]. Uddim et al. [19] studied on Anti-inflammatory and Antioxidant activity of Leaf extract of *Crinum*

asiaticum. Journal of Pharmacy Research Pharmacological activities of *Crinum asiaticum* leaves was recorded by Kumar Senthil [20] KK Sun et al. [21] found a new phenolic compound from *Crinum asiaticum* L. Ghosal et al. [22] recorded A novel Glucoalkaloid from *Crinum latifolium*. Haque et al. [23] studied Ethnomedicinal uses of *Crinum asiaticum*. Ilavenil et al. [24] evaluated Antibacterial activity and Phyto chemical analysis of *Crinum asiaticum*.

Material and Methods

Proper observation on the plant *Crinum asiaticum* Linn was made for assessment of their variation. Images were taken and are arranged as per their different plant parts. The study on plant propagation by using their newly developing adventitious bulbs were done following supply of required materials time to time to the developing small bulbs. These grown bulbs are gradually converting as their mother plant. Proper soil preparation, water etc were managed to support the plant development. In initial stage of bulbs growth water logging is harmful so immediately excess water were removed near the plants. Medicinal profile of the plant was recorded as per available literatures.

Result and Discussion

About the Plant

Crinum asiaticum Linn, an impressive huge lily (also known as Giant *Crinum*, *Crinum* Lily, Giant *Crinum* lily Cape Lily, Poison Lily, Seashore Lily Grand *crinum* lily, Spider Lily, Wide leaved *Crinum* etc) belonging to the family Amaryllidaceae. The plant is distributed throughout India. In Hindi it is known as Chindar, Pindar, Sudarshan, Shukhdarsan and in Sanskrit is known as Madhuparnika, Vriskani, Nagadamani, Nagdamini, Sudarsana. It is called Poison Bulb in English. It is a bulbous, evergreen, Perennial, herbaceous plant and is a medium heighted (Small to Moderate in size) with attractive long, green, shiny, linear-lanceolate, evergreen leaves around 1-1.5 meter long. The leaves emerge from large bulb. Roots are cylindrical, around 25 cm long with around 1 cm thick. Flowers are white in color and are originating in clusters on thick and succulent stalk. Flowering stalk is about 1-1.2 meter long which bearing beautiful flowers in clusters. Many Flowers (Around 20-30) are arranged in umbel. Corolla around 8 cm long and are white. Flowers are nearly 15 cm long, Filament about 5 cm long, Anther 2 cm. Ovary three celled. Six stamens and one Stigma present. Fruit is globose nearly 5 cm across filled with large seed. Seeds are 2-5 cm wide. *Crinum asiaticum* producing tunicate bulb and is mostly planted in gardens for its beauty of foliage and flowers.

It is hermaphrodite Perianth of 6 tepals, free or slightly united at the base. Stamens 6, Carpels 3, united, inferior ovary, placentation axile. Fruit capsular with loculicidal dehiscence. Seeds few too many. It is a bulb forming perennial plant. The plant is native to tropical Asia. It is marked for its value their beauty as well as for medicinal purpose. Roots are adventitious at the below of underground bulb. Stems are erect, unbranched, cylindrical smooth, herbaceous in nature. Leaves are long, green,

and glabrous, with parallel leaf venation. Flowers are white in color, beautiful at the top of inflorescence. Propagation of this plant is by both the modes such as sexual and by vegetative modes.

For vegetative propagation small bulbs developed nearby main large bulb these are required to separate by digging carefully near of large main bulb. Prepared / mature bulbs are further required to grow in prepared sites may be pots or the field by following proper supply of water and other requirements to the developing new plantlets. It has average water requirement. It is adapted to grow in almost all type of well drain Soil. Water logging near the plant creating adverse effect on its growth and development. Seed propagation should be followed by sowing seeds soon after their ripening. Seeds are taking around 30 days to germinate in the presence of favorable environmental conditions. It is well adapted to grow in porous soil with moderate water availability. The plant is introduced in garden and homes for both the purpose as for their medicinal and for value in beautiful flowers.

Phytochemicals

Crinamine, Lycoricidine, Lycorisode, Cirsasiatin, Hippadine, Crinine, Crinasiatine, Methyl linoleate, Cridnidine, Lucan etc.

Medicinal Profile/ Pharmaceutical Activities

The plant is main source of many active chemical compounds with important traditional medicinal uses among human society. The plant is utilized singly as well as by mixing with different plant parts of varied plant species. It has multifold ethno medicinal uses such as -

- a. Antimicrobial (Antibacterial, Antifungal).
- b. Analgesic, Antioxidant.
- c. Antiviral, Antitumor.
- d. Antiemetic, Anthelmintic.
- e. Haemagogue, Analgesic.
- f. The bulbs of this species are laxative.
- g. Its seeds are used as purgative and diuretic.
- h. Its leaves are applied in skin infections, and also as expectorant.
- i. Inflammation
- j. Wound healing, Purgative, Bleeding control,
- k. Tonics, Urine problem,
- l. Boil, Tonsils
- m. Anti parasitic, Insecticidal activity.
- n. Rheumatism, Bone fracture
- o. Bulbs as antidotes, Pain killer
- p. Joint pain
- q. Roasted bulbs are used to discharge pus.
- r. Anti asthmatics, Diuretics,
- s. Laxative, Purgative, Diaphoretic etc.

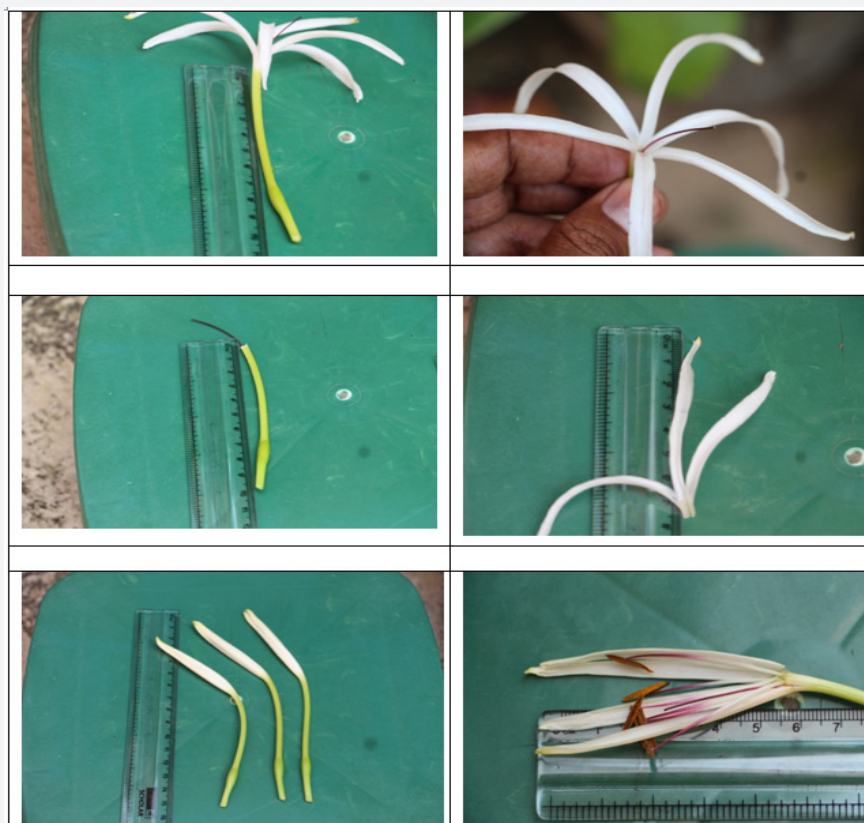
Conclusion







Crinum asiaticum Linn. : Different parts of Flower.



Crinum asiaticum Linn. : Flower parts.



Appendix 1: *Crinum asiaticum* Linn. : Different views.

The plant *Crinum asiaticum* has rich potential to treat many disorders among human society. It has multiple ethno medicinal uses as reported by many researchers. Scientific reports on its enormous phyto constituents and pharmacological application of *Crinum asiaticum* showing its wide range of ethno medicinal uses. Based on the above utility and valuation to treat certain disorders this plant should not be overexploited, much spread for maintaining their existence for coming future (Appendix 1).

References

- Benson L (1970) Plant Classification. Oxford and IBH publishing Co, New Delhi, India, pp. 793-797.
- Asmawi MZ, Arafat OM, Amirin S, Eldeen IM (2011) In vivo Antinociceptive Activity of Leaf Extract of *Crinum asiaticum* and Phytochemical Analysis of the Bioactive Fractions. *Int J Pharmacol* 7(1): 125-129.
- Awatef MS, Asmawi MZ, Jagdish NS, Ahmad PMY (1999) Anti-inflammatory activity of *Crinum asiaticum* plant and its effect on bradykinin-induced contractions on isolated uterus. *Immuno pharmacology* 43(2,3): 311-316.
- Ghosal S, Kumar Y, Singh SK, Kumar A (1986) Chemical constituents of Amaryllidaceae. Part 21. ungeremine and criasbetaine, two antitumor alkaloids from *Crinum asiaticum*. *Journal of Chemical Research* 3: 112-111.
- Nair JJ, Machocho AK, Campbell WE, Brun, Villadomat F, et al. (2000) Alkaloids from *Crinum acowanii*. *Phytochemistry* 54: 945-950.
- Patel JB, Dangar RD, Dangar RR, Patel BH, Parmar DR, et al. (2010) Review: *Crinum asiaticum*, *International Journal of Pharmaceutical and Applied Sciences* 1(2): 25-28.
- Rahman A, Hossain SMA, Ahmed NU, Islam S (2012) Analgesic and anti-inflammatory effects of *Crinum asiaticum* leaf alcoholic extract in animal models. *African Journal of Biotechnology* 12(2): 212-218.
- Pham HL, Dopke W, Wagner J, Mugge C (1998) Alkaloids from *Crinum amabile*. *Phyto-chemistry* 48(2): 371-376.
- Chen CK, Lin FH, Tseng LH, Jiang CL, Lee SS (2011) Comprehensive study of alkaloids from *Crinum asiaticum* var *sinicum* assisted by HPLC/DAD/SPE/NMR. *J Nat Prod* 74(3): 411-419.
- Ghosal S, Saini KS, Frahm AW (1983) Alkaloids of *Crinum latifolium*. *Phyto-chemistry* 22: 2305-2309.
- Refaat J, Kamel MS, Ramadan MA, Ali AA (2012) *Crinum*; an endless source of bioactive principles: a review. Part 1- *crinum* alkaloids: lycorine-type alkaloids. *Inter J Pharm Sci Res* 3(7): 1883-1890.
- Samud AM, Asmawi MZ, Sharma JN, Yusuf APM (1999) Anti-inflammatory activity of *Crinum asiaticum* L and its effect on bradykinin-induced contraction on isolated uterus. *Immuno pharmacology* 43(2, 3) : 311-316.
- Sun Q, Shen YH, Tian JM, Tang J, Su J, et al. (2009) Chemical constituents of *Crinum asiaticum* L. var. *sinicum* Baker and their cytotoxic activities. *Chem Biodivers* 6(10): 1751-1757.
- Rahman A, Sharmin R, Uddin N, Rana S, Ahmed NU (2011) Antibacterial, Antioxidant and Cytotoxic Properties of *Crinum asiaticum* Bulb Extract. *Bangladesh J Microbiol* 28(1): 1-5.
- Rahman MA, Sharmin R, Uddin MN, Zaman MU, Rana S et al. (2011) Antinociceptive and anti-inflammatory effect of *Crinum asiaticum* bulb extract. *Asian J Pharm Clin Res* 4(3): 34-37.
- Sun Q, Zhang WD, Shen YH, Zhang C (2008) A new phenolic compound from *Crinum asiaticum* L. *Chinese, Chem Lett* 19: 447-449.

17. Surain P, Aneja KR (2014) Anticandidal potential of *Crinum asiaticum* leaves extract against selected oral and vaginal *Candida* pathogens, *Journal of Innovative Biology* 1(1): 27-30.
18. Fennell CW and Van SJ (2001) *Crinum* species in traditional and modern medicine. *Journal of Ethno pharmacology* 78(1):15- 26.
19. Okpo SO, Fatokun F, Adeyemi OO (2001) Analgesic and anti-inflammatory activity of *Crinum glaucum* aqueous extract. *Journal of Ethno pharmacology* 78(2): 207-211
20. Uddim MZ, Emran TB, Nath AK, Jenny A, Dutta M, et al. (2012) Anti-inflammatory and Antioxidant activity of Leaf extract of *Crinum asiaticum*. *Journal of Pharmacy Research* 5(12): 5553-5556
21. Kumar Senthil KK (2011) Evaluation of wound healing activity of leaves of *Crinum asiaticum*. *International Journal of Phytotherapy* 1(1): 16-20.
22. Ghosal S Saini, KS Arora VK (1983) Latisoline, A Novel Glucoalkaloid from *Crinum latifolium*, *J Chem Res* 4: 238-239.
23. Haque M, Jahan S, Rahmatullah M (2014) Ethnomedicinal uses of *Crinum asiaticum*: A Review. *World Journal of Pharmacy and Pharmaceutical Sciences* 3(9): 119-128.
24. Ilavenil S, Kaleeswaran B, Ravikumar S (2010) Evaluation of Antibacterial activity and Phytochemical analysis of *Crinum asiaticum*. *International Journal of Current Research* 1: 35-40.



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