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**TAXONOMIC STUDY OF
 (IPOMOEA CAIRICA (L.) SWEET
 CONVOLVULACEAE)**

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Abstract-Ipomoea is the largest genus in the flowering plant family Convolvulaceae, The most widespread common name is morning glories.

The genus includes food crops; the tubers of sweet potatoes (*Ipomoea batatas*) and the leaves of water spinach (*I. aquatica*) are commercially important food items and have been for millennia. The water spinach (*I. aquatica*) commonly found in ponds, cultivated for stem and leaves used as vegetables.

The study of Anatomical as well as morphological character is the key aspect of various Classification systems which is the basic unit of Taxonomy.

The present study was conducted on the plant *Ipomoea cairica* from Aurangabad (MS) India, reports Morphology, Anatomy, Pollen Morphology, Stomatal Morphology, Trichome structure as well as Maceration study.

Keywords: *Ipomoea cairica*, Taxonomy, Anatomy, Maceration, Acetolysis.

1. INTRODUCTION

Ipomoea cairica morning glory has many common names, including mile-a-minute vine, Messina creeper, Cairo morning glory, coast morning glory and railroad creeper.

This vining perennial has palmate leaves and large, showy white to lavender flowers. Each fruit matures at about 1 cm across and contains hairy seeds Erect to subsucculent shrubs; stems fistulose at maturity, tomentose. Leaves ovate-lanceate, 4-14 by 2.5-9 cm, base cordate, and apex gradually acuminate, lateral veins 8-10 pairs, prominent. Cymes many-flowered, axillary or subterminal; peduncle c. 10 cm long; calyx lobes subequal; corolla pale pink, c. 9 cm long. Capsule ovoid. Seeds pubescent..

Range Description: The species have wide distribution in continents of Africa, Australia and Asia. In Asia it is mainly distributed in India and Sri Lanka. In India it is observed in Maharashtra (Venkanna and Das Das 2001), Mahanandi in Nallamalais in Andhra Pradesh (Ellis 1990), Chengalpattu, South Arcot (Chandrabose 1987), Ramanathapuram and Gulf of Mannar in Tamil Nadu (Daniel and Umamaheswari 2001). Countries - Native: Australia; Botswana; India (Andhra Pradesh, Maharashtra, Tamil Nadu); Madagascar; Malaysia; Namibia; South Africa; Sri Lanka.

2. MATERIALS AND METHODS

2.1 Plant Material

Plant materials of *Ipomoea cairica* (L.) Sweet was collected from Aurangabad city of Maharashtra state from India.

The plant material were collected in 6% formalin for anatomy (Root, Stem, Leaf, Flowers) and in dry form for morphology (Flowering twig).

Pollen grains was collect in Acetic acid for acetolysis.

2.1.1 Methods

Various methods were used for the study Genus *Ipomoea cairica*.

- De-hydrolyzing and Staining method is used to study anatomical feature of the particular plant part.
- Maceration by (Jaffrey method)
- Acetolysis

2.2 Taxon Treatment

I. cairica (L.) Sweet, Hort. Brit. 287. 1827; Santapau in Rec. Bot. Surv. India 16(1); 193.1953; Naik, Fl Osmanabad 220.1979 *Convolvulus cairicus* L. syst. ed. 10.922.1759. *Ipomoea palmata* Forsk. Fl. Aeg. Arab 43.1775; Clark in Hook. F.Fl. Brit. India 4:214.1883. *I. pulchella* Wt. Icon. T. 156.1837 non Roth 1821. GARWEL

Glabrous, perennial twinning herbs; root tuberous; stem terete, smooth. Leaves ovate or orbicular in outline, 3-10 cm long and broad, cordate at base, palmately divided into 5-7, ovate-lanceolate, or elliptic lobes which are entire acuminate and mucronate, petiole 2-6 cm long, often with pseudo stipules at base. Flower axillary in 1-

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few flowered cymes; peduncles 0.5-7 cm long; pedicels 1-2 cm long; bract minute. Sepal glabrous, subequal, ovate, 4-6 mm long, with pellucid dots on the back and pale scarious margin, obtuse, mucronate. Corolla funnel shaped, blue, purple or pale pink, 4-6 cm long. Stamens included; filaments pilose at base. Capsule subglobose, 10-12 in diam., 2-celled, 4-valved. Seeds 2-4, ovoid, 4-6 mm long, hairy. Planted in gardens, in hedges on walls etc. for ornamental purpose. Fls and frts Oct. to Apr. Exsiccata – Osmanabad town, Naik 1317. Note-Fruiting is rare and seeds are often not well developed. Propagation mostly by vegetative method.

Table-2.1 Synonyms

<i>Ipomoea batatilla</i> (Kunth) G. Don	<i>Ipomoea batatilla</i> (Kunth) G. Don
<i>Ipomoea crassicaulis</i> (Benth.) B.L. Rob.	<i>Ipomoea crassicaulis</i> (Benth.) B.L. Rob.
<i>Ipomoea fistulosa</i> Mart. ex Choisy	<i>Ipomoea fistulosa</i> Mart. ex Choisy
<i>Ipomoea fistulosa</i> f. <i>albiflora</i> Chodat & Hassl.	<i>Ipomoea fistulosa</i> f. <i>albiflora</i> Chodat & Hassl.
<i>Ipomoea fistulosa</i> var. <i>nicaraguensis</i> Donn.Sm.	<i>Ipomoea fistulosa</i> var. <i>nicaraguensis</i> Donn.Sm.
<i>Ipomoea fruticosa</i> Kuntze	<i>Convolvulus batatilla</i> Kunth
<i>Ipomoea gossypoides</i> D. Parodi	<i>Convolvulus fistulosus</i> (Mart. ex Choisy) Kuntze
<i>Ipomoea nicaraguensis</i> (J. D. Sm.) House	<i>Batatas crassicaulis</i> Benth.
<i>Ipomoea texana</i> Coult	<i>Convolvulus batatilla</i> Kunth
<i>Ipomoea batatilla</i> (Kunth) G. Don	<i>Convolvulus fistulosus</i> (Mart. ex Choisy) Kuntze



Fig. 2.1 (A) Images *Ipomoea aquatic*: Flower



Fig. 2.1 (B) Images *Ipomoea aquatic*: Flower



Fig. 2.1 (C) Images Ipomoea aquatic: Flower



Fig. 2.2 (D) Images Ipomoea aquatic: Habit



Fig. 2.2 (E) Images Ipomoea aquatic: Habit

3. ANATOMY

Anatomical characters in general, play an increasingly important role in the formulation of natural and phylogenetic groups. While anatomical evidences incidentally by them selves cannot form the basis of a general classification or phylogeny they are still largely applied to elucidate phylogenetic relationship and to reveal possible affinities when considered in conjunction with other kinds of evidences derived from allied fields of study, such as morphology, cytology, palynology etc.

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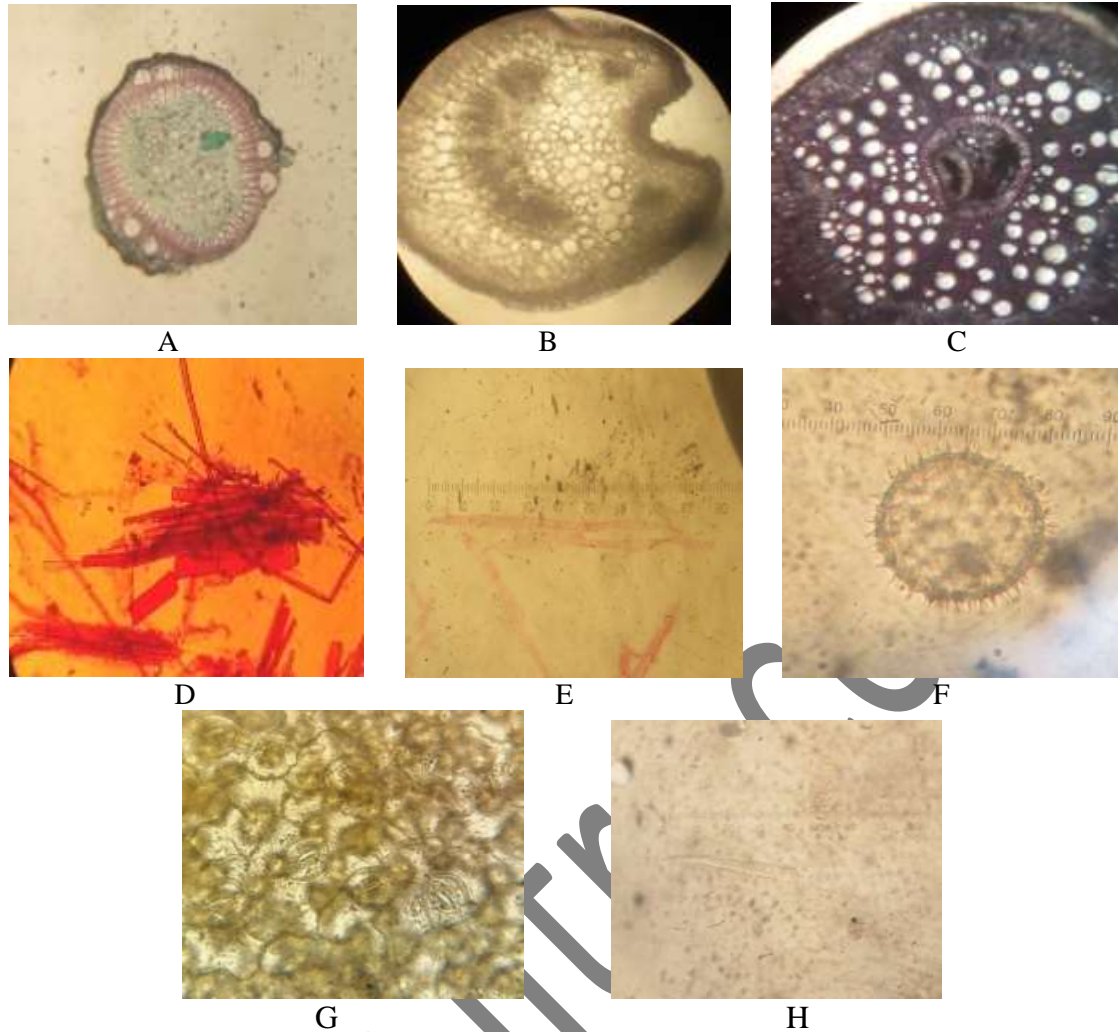


Fig. 3.1 Anatomy : I. cairica : A- Stem, B-Petiole, C -Root, D & E- Maseration, F- Pollen, G- Stomata, H Trichome

3.1 Anatomical Description

3.1.1 Leaf Anatomy

- Lower and upper epidermis is barrel-shaped and compactly arranged single layered.
- Upper epidermis has a thick cuticle. & Lower epidermis has thin cuticle
- The condition it show amphistomatic. Stomata are present on both surfaces of the leaf i.e. paracytic type of Stomata
- Unicellular uniseriate trichomes / hair it is presence on upper surface of leaf.
- Tracheids are long with spiral sidewall thickening.
- Fibres are typically libriform type and are extremely long. Ends are mainly blunt, but pointed endings are also recorded. Pits are present but lesser in number.
- Vessel elements are moderately long with simple and transverse or obliquely placed perforation plates.
- Pits are simple and tails are frequently present with some vessel elements.

3.1.2 Stem Anatomy

The transverse section through the internodes of stem shows the following anatomical features (Fig. 3.1- a, b).

3.1.3 Epidermis

Epidermis consists of single layered cells of compact arrangement and covered with cuticle.

3.1.4 Cortex

The cortex is massive and consists of three distinct zones. The first zone is hypodermis of few cells thick, lying just below the epidermal layer. Two to three layers of parenchyma cells are present beneath the hypodermal

layer is called the middle cortex. A continuous, compactly arranged barrel shaped cells forms the starch sheath layer which is the last zone of cortex. Crystals and latex are present in some cells of the middle cortex.

3.1.5 Vascular bundles

Vascular bundles form a continuous cylinder of xylem and phloem. They are collateral, conjoint and open type with outer phloem, middle xylem.

3.1.6 Pith

Pith is absent, if present as negligible.

3.1.7 Root Anatomy

The transverse section through the internodes of root shows the larger phloem patches as well as xylem tissues towards the centre of the section. The root shows the action stele type of stele.

4. RESULT AND DISCUSSION

The region of Marathwada has vegetation and distribution of *Ipomoea cairica* most diverse because of its favorable climate. Members of this genus are dominant in the plains and some species are found in the Vidarbha region of the Maharashtra state. In past, the some pockets of the state remained untouched. In view of the fragmentary accounts *Ipomoea* has been compiled.

Table-4.1 The morphological Description of *Ipomoea Cairica*

S. No.	Characters	I. Carica
1	Habit	Twining / Terrestrial
2	Leaves (Length)	2.0-4.5 cm.
3	Leaves (Width)	3.0-4.4 cm.
4	Leaves (Base)	5-7 lobed
5	Leaves (Margin)	Entire
6	Petiole (Length)	2.0-2.5 cm.
7	Stem(Surface)	Glabrous
8	Stem(Branching)	Dichotomous/ Flexible
9	Stem(Color)	Green
10	Stem(Type)	Herbaceous
11	Petal(Color)	Pink
12	Petal(Length)	Up to 6.0 cm.
13	Sepal (Length)	Up to 0.6 cm.
14	Pedicel(Length)	2.2-2.5 cm.
15	Seeds	Not well developed
16	Seeds(color)	--
17	Seeds(Length)	--

REFERENCES

- [1] J.D.Hooker; The flora of British India Reve.and Co.London, 1879.
- [2] *Ipomoea cairica* (L.) Sweet, USDA Plants.
- [3] Systematic implications of seed coat diversity in some representatives of the genus *Ipomoea* (Convolvulaceae).Paper
- [4] Inamdar, J. A. 1969. Development of stomata on foliar and floral organs of two species of *Ipomoea* Journ. Ind. Bot. Soc. 48 (1-2): 173-176.
- [5] Malalavidhane, T. S., Wickramasingle, S. H. D. N. and Jansz, E. R. 2002. Oral hypoglycemic activity of *Ipomoea aquatica* Journ. Ethn. Pharm. 72: 293-298.
- [6] Mc Donald, J.A. and Mabry, T.J. 1992. Phylogenetic systematics of new world *Ipomoea* (Convolvulaceae). Plant System. andevol. 180: 243-259.
- [7] Mc Donald, J.A. and Mabry, T.J. 1992. Phylogenetic systematics of new world *Ipomoea* (Convolvulaceae). Plant System.Evol.180: 243-259.
- [8] Ram Gore, and et al.2015. Flora of Balaghat, (Review, as PhD. Thesis)864-874.
- [9] V. N. Naik Flora of Marathwada.
- [10] V. N. Naik Taxonomy of Angiosperms.