# Study of Morphology and Phytochemical Screening of *Ipomoea Carnea* Jacq. of Convolvulaceae Growing in West-Vidarbha.

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*In West- Vidarbha, Ipomoea carnea is a well known alien invasive species belonging to Convolvulaceae or bindweed family. It has a unique potential to servive in terrestrial as well as aquatic habitat. It has rich floristic diversity.The plant is harvested from the wild for the local use and possesses medicinal values due to presence of phytochemicals.Phytochemicals are non –nuritive plant chemicals that have protective digestive enzyme that break down glycoside bonds in chitin.*

*Keywords: Alien, Convolvulaceae, phytochemicals, Medicinal value.*

## Introduction

West Vidarbha comprises districts Akola, Amaravati, Buldhana, Washim and Yeotmal.Plants are critical to other life on this planet because they form the basis of all food webs. They have always played an important role in people's lives providing us with food, Shelter ,medicine arts and a connection to the natural world plants can be used as a tool to empower and improve individuals communities and societis. In the past all the medicinal used were from the plants being man's only chemist for ages. Today a vast knowledge concerning therapeutic properties of different plants has accumulated (Kokate et al, 2005).

Phytochemicals are non nutritive plant chemicals that have protective or disease preventive properties. They are non essential nutrients meaning that they are not required by thuman being for sustaining life. There are more than thousand known phytochemicals. The non alkaloidal and non saponifible fraction isolated from the leaves of I. carnea shows the depresser activity on Central Nervous system (Bhattacharya and Ray 1975) from the leaves of this species, agroclavin and dihydrolyserol were obtained. (Umar et. al. 1980) From latex of Ipomoea carnea was found a new Chinase, a digestive enzyme that break down glycoside bonds in Chitin (Patel et, al 2009; 2010 ) Ipomoea carnea , the pink morning glory is a species of family Convolvulaceae and is a unique plant which was introduced as an invasive plant from tropical America.

In India it has become a naturalised species invading the wetlands , cannnals, darins, banks, waste lands.The important character of the plant is that it can regenerate very fast from its part in dry as well as the moist surfaces. Due to this unique characters this plant is also from as beshram or Thetbar. Another property of the plant is that it can servive well in terrestrial surface as well as can withstand in waterlogged region or even water bodies the plant can propagate both vegetatively by stems which show roofing within a few days and sexually by seeds and has rapid growth rate (Bhalerao 1985).The hairs or trichomes are found to be very prominent which is one of the important Characteristic of the family Convolvulaceae.The present paper deals with the morphological and phytochemical screening.

Botanical Classification of (Ipomoea carnea) Jacq

Kingdom – Plantae

Subkingdom - Tracheophyta

Division – Spermatophyta

Sub-Division- Magnoliophyta
Class – Magnoliopsida Dicotyledons
Subclass - Astridae
Order- Solanales
Family- Convolvulaceae
Genus- Ipomoea
Species- Ipomoea carnea Jacq.

**Material and Methods** –

Collection of plant material will be carried out from West Vidarbha region Identification will be made with the help of standard floras (Cook 1967, kamble and Pradhan 1988 and Naik 1998) and confirmed by the Plant Taxonomist Dr. S.P.Rothe (Prof. and Head Department of Botany Shri Shivaji College, Akola)

The plants were collected from aquatic as well as terristirial condition for the morphological study of Ipomoea carnea. Morphological observations was various a qualitative characters consider were root , stem, leaves, flower , capsule and seed.

Similaraly for phytochemical screening the collected plant material were chopped into pieces shade dried and coarsely powdered by using puverizer then the plant powder samples (seed leaf and stem) was subjected to successive solvants extraction with organic solvent of increasing polarity such as petroleum ether acetone chloroform Benzene 7 distilled water the extract of each sample was prepared by soaking 10 gram dried powder samples , filter paper and used for phytochemical study. (Kokate ,1980, Harbone,1998).

**Test for Alkaloids:-**To the 2-3 ml filtrate,1ml of dilute HCL and 1 larger reagent was added and shake well. Yellow precipitate showed the presence of flavonoids.

**Test for Steriods :-** To 2 ml of extract of chloroform and 2ml of conc. H2So4 was added . The solutuion was taken well. As a result, chloroform layer turned red acid layer showed greenish yellow fluroscence.

Test for Tanin :- On addition of 5% Fecl3 solution to the extract blue colour appeared.

Test for Saponin :- To 1ml extract 20 ml distilled water has added and shake well in measuring cylinder. Then 1 cm layer of foam was formed.

**Test for Quinones:-** To 2ml of extract conc. H2So4 was added and shake well for 5 min. Shows the red colour. Biologically active compounds were also reported by using high performance thin layer chromatography (HPTLC), (Swaroop,A.A.2005)

In Ipomoea carnea various phytochemical constituents in different parts are obtained

**Result and Discussion**

**Morphological of features of Ipomoea carnea**

Large shrubby erect up to 3 m in hight, fistular stems, glaucous having latex. Leaves broad ovate, 14-22 x 10-13 cm, base truncate, entire margin, acuminate. Flowers pink, funnel form in dichotomous, axillary and

terminal cymes. Calyx lobes 5, unequal brodly ovate. Corolla unnel form, lobes 5. Stamens 5, hairy below. Bicarpellary Ovary, tetralocular, 1 ovule per locule, placentation, axile. Capsules globose or ovoid, seeds hairy.

**Macroscopical Features of leaf of Ipomoea carnea**

The Size of the leaf is 10- 24cm Length and 4.0-9.0 cm in Width, Heart Shaped, green in colour Apex Cordate, Margin Entire, Base Symmetric, Venation Reticulate pinnate, Surface are Hairy on both side, Prominent Midrib on lower surface.

**Macroscopic Features of Flower Ipomoea carnea**

The flowers are axial, solitary or arranged in monochasium scropioid cymose inflorescence. The pedicel is green in colour, erect, cylindrical, solitary slightly pubescent, measures 1.5-2.2 cm long and 0.14-0.20 cm diameter. The calyx is persistent, consisting of 5 free quinqiicinal sepals, ovate in shape, with entire margin, symmetric base and acute apex, green in colour, nearly glabrous, measure 0.40.7 cm long and 0.6-0.7 cm width. The corolla is formed of 5 united petals (sympetalous), delicate, pinkish white in colour, with 5 pink to violet coloured strands in the regions of cohesion with each other. The mouth of the corolla has an entire margin. .The androecium is 5 free, epipetalous stamens, which are unequal in length; two of them being longer than the others. They are united to the base of the petals. The basal part of the filament is hairy, pinkish red and swollen, while the upper part is filiform in shape and white in colour. The filament measures 1.6-2.1 cm long and 0.20-0.25 cm width at its swollen base. The anthers are whitish yellow, oblong, basifixed and bilobed opened laterally, and contain yellow pollen grains. The anther attains 0.5-0.7 cm long and 0.200.25 cm width. The gynoecium, shows a superior ovary which is bicarpellary, and bilocular. Each locule contains one or two small anatropous basally placented ovules. The ovary is conical in shape, whitish yellow in color and carried on yellowish green hypogenous disc. The ovary measures 0.3-0.4 cm long and 0.15-0.20 cm width. The style is cylindrical, yellowish white in color, measures 1.4 – 1.6 cm long and 1-2 mm width and ending with a bilobed stigma, each attains 0.7-1.0 mm long, and 0.3-0.6 mm width.

**The fruit of Ipomoea carnea**

The fruit is a simple dry dehiscent capsule, and is derived from a superior gynoecium. It is pedicellate, subglobular in shape, with pointed apex and spherical base, greyish green in color when unripe, turning greyish brown on ripening. The fruit shows five persistent sepals and remains of the style at the apex. It measures 1.0-1.5 cm in height, 0.8-1.3 cm in width and usually contains four dark brown colored seeds densely covered with hairs. The pericarp is thin, measuring about 0.1 cm thick, smooth and glabrous with yellowish grey inner surface.

**The seed of Ipomoea carnea**

The seed measures 0.4-0.6 cm in length and 0.2-0.3 cm in diameter, dark brown to black and derived from an anatropous ovule. It is covered with an easy removable dense pale brown to greyish brown trichomes, which attain 0.7-1.0 cm in length. The seed is three-sided, with two flat ventral surfaces that may have a central depression and one convex dorsal surface. The micropyle is represented by a polar scar near the hilum. . The raphe is represented by a raised ridge which extends from the hilum at the base to the chalaza at the apex. The

seeds are covered by a dense, cottony, furry indumentums. . Hairs are much longer on the edge of the rounded abaxial surface of the seeds (at the top and at the base of the elliptically complanate cross-section). The seeds have a black, 0.3 mm thick, very hard, bilayered testa.

**Phytochemistry**

Various phytochemical constituents in different parts of Ipomoea carnea is given below.

**Root** :The roots are reported to contain 2-Ethyl-1,3-dimethylbenzene, 2-(12-Pentadecynyloxy) tetrahydro- 2H-pyran, 3-Furanyl[2-hydroxy-4-methyl-2- -(2-methylpropyl) cyclopentyl]- methanone, 2,2Dideuterooctadecanal , Hexadecanoic acid , Linoleic acid (Sahayaraj et al., 2014).

**Stem**: The stem of the plant contains 2-(12-Pentadecynyloxy) tetrahydro- 2H-pyran, 1-Octadecanol, Hexadecanoic acid , Epiglobulol, , 1-Octadecanol (Sahayaraj et al., 2014).

**Leaves** :The leaves of the plant showed the presence of thirteen compounds which include hexa decanoic acid, stearic acid, 1, 2 diethyl phthalate, n-octadecanol, octacosane, hexatriacontane, tetracontane, 3diethylamino-1-propanol (Tirkey et al.,1988; Vaishali et al., 2009). Also the presence of swainsonine and calystegines B1, B2, B3, and C1 were detected in the aqueous ethanolic extract of leaf (Balogh et. al., 1999).

**Flowers** :The flowers of the plant are reported to contain flavonoids, tannins, glycosides, alkaloids, carbohydrates and phenolic compound (Gupta et al., 2010). The presence of swainsonine and calystegines B1, B2, B3, and C1 confirmed in the aqueous ethanolic extract of flowers (Balogh et al., 1999).

**Seeds**: Presence of swainsonine and calystegines B1, B2, B3, and C1 are found in seeds of the plant Ipomoea carnea (Balogh et al., 1999).

**Conclusion**

Ipomoea carnea propagate vegetatively, it spread soon and covers vast area in land as well as water. The morphological characters like hollow stem, root proliferating from nodal region of stem and some other anatomical characters like Spongy parenchyma presence of parenchymatous cells between upper and lower surface of petiole and stem, flexible fracture, of root tangentially elongated Cambium radially arranged cambiform cells helps it to survive both in land and water.

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