



## A REVIEW ON *IPOMOEA PALMATE*

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### ABSTRACT

Cairo morning glory, *Ipomoea palmata* (L.) Lam., is an important food and industrial material crop throughout the world. It is also an alternative source of bio-energy as a raw material for fuel production. China is the biggest Cairo morning glory producer in the world. Biotechnology offers great potential for improving disease, pest and stress resistance and nutritional quality of Cairo morning glory. In the past decades, great progress in Cairo morning glory omics and biotechnology has been made in China. *Ipomoea palmata* having several medicinal properties those are antimicrobial, anti oxidant, anti inflammatory, mosquitoes larvicidal properties etc.

**Keywords:** *Ipomoea palmate*, antimicrobial activity, antioxidant activity

### INTRODUCTION:

*Ipomoea palmate* belongs to a *Ipomoea cairica* (Convolvulaceae) family. It is a climbing herb and is found abundantly in tropical and subtropical region. It has many common name and is also known as railroad creeper<sup>1</sup>. The genus *Ipomoea* has 400 species all over the world from *ipomoea palmate* forsk or *Ipomoea cairica* L. grow abundantly in Egypt. *Ipomoea palmate* is used in treatment of various diseases<sup>3</sup>. The major bioactive constituents previously isolated from the genus *Ipomoea* were lipoidal matters and phenolic compounds<sup>4</sup>. *Ipomoea* is the largest genus in the flowering plant family convolvulaceae, with over 500 species. The generic name is derived from the Greek words meaning "resembling". It refers to their twining habit. The genus occurs throughout the tropical and subtropical regions of the world. Humans use *Ipomoea* for their content of medical and psychoactive compounds, mainly alkaloids.

The genus includes food crops; the tubers of sweet potatoes and the leaves of water spinach are commercially important food items. *Ipomoea mauritiana* is one of the many ingredients of *chyawanprash*, the ancient Ayurvedic tonic called "the elixir of life" for its wide-ranging properties. The various species have wide medical application. They are used to treat blood disease, sterility in women, urinary infection, constipation, gynecological disorder<sup>6</sup>.

*Ipomoea cairica* ethanol extracts from medicinal plants commonly used by Governador Valadares people were tested for cytotoxicity (BST assay), antioxidant activity, antagonist properties [11-13]. Antinociceptive effect from *Ipomoea cairica* L. Sweet (Convolvulaceae) is used in Brazilian folk medicine for the treatment of rheumatism and inflammations<sup>7-11</sup>

**Fig 1. *Ipomoea palmata***



**Fig 2. Tubers of *Ipomoea palmate***



### Common names

Cairo morning glory, coast morning glory, five finger morning glory, mile a minute, a minute vine.

### Synonyms

*Ipomoea cairica*, *ipomoea pendulus*

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## Naturalized Distribution

Widely naturalised in the warmer coastal regions of eastern Australia (i.e. in the coastal districts of Queensland and New South Wales). Also occasionally naturalised in the coastal districts of south-western Western Australia and southern South Australia, and on Lord Howe Island, Norfolk Island and Christmas Island. Also regarded as being naturalised in New Zealand, southern USA, Central America, South America and on numerous Pacific islands (e.g. Fiji, New Caledonia, Niue, the Solomon Islands, Tonga and Hawaii)<sup>12</sup>

## Habitat

A weed of waste areas, disturbed sites, rainforest margins, open woodlands, bushland, gardens, fences, coastal sand dunes and vegetation growing near waterways (i.e. riparian areas). It inhabits tropical,sub-tropical and warmer temperate environments<sup>12</sup>

## Habit

rampant long-lived (i.e. perennial) climber reaching up to 5 m or more in height, or creeping along the ground<sup>13</sup>.

## Stems and Leaves

The slender stems are hairless (i.e. glabrous), grow in a twining habit, and sometimes produce roots at the joints (i.e. nodes). The alternately arranged leaves (3-10 cm long and 3-10 cm wide) are divided into five or seven narrow lobes, like the fingers of a hand (i.e. they are palmately lobed). These leaves are hairless (i.e. glabrous) and borne on stalks (i.e. petioles) 2-6 cm long<sup>14</sup>.

## Flowers and Fruit

The funnel-shaped (i.e. tubular) flowers are purple to pinkish-purple (occasionally white) with a darker purple centre. They are borne singly or in small clusters on short stalks originating in the leaf forks (i.e. axils). These flowers (4-6 cm long and 5-8 cm across) have five petals that are fused into a tube (i.e. corolla tube) and five small sepals (4-7 mm long). Flowering occurs throughout most of the year. The fruit capsules are more or less globular (i.e. sub-globose) in shape and turn from green to brown in colour as they mature. These capsules (10-12 mm across) contain four large brown seeds (about 6 mm across) that are slightly three-angled in shape. The seeds have smooth surfaces interspersed with dense tufts of long silky hairs<sup>13-14</sup>.

## Reproduction and Dispersal

This plant reproduces vegetatively by rooting along its stems and also produces seeds. Stem fragments and seeds are often dispersed in dumped garden waste and can also be spread by water<sup>12</sup>.

## USES

### Anti microbial, and Anti oxident activities:

Methonal extract of leaves of *Ipomoea cairica* possesses good antioxidant potential presumably because of its phytochemical constituents. The DPPH scavenging activities of *Ipomea cairica* leaves extract showed a good

correlation with its reductive potentials. Based on the result of this study it can be said that *Ipomoea cairica* leaves is an effective antimicrobial and antioxidant agent that can be used for folk medicine and will be a good source to treat and control many diseases. These findings could also be of commercial interest to both pharmaceutical companies and research institutes in the production of new drugs<sup>2</sup>.

### Anti-inflammatory activity:

The aqueous methanol extract of *I. palmata* proved a remarkable and significant anti-inflammatory activity. Phytochemical and chromatographic screening of this bioactive extract revealed the presence of flavonoids. Therefore it was of interest to isolate these compounds by different chromatographic tools (TLC, CC and PPC) as previously reported in details. The results revealed the presence of compounds<sup>15</sup>.

### Antioxidant activity:

The methanol extract of (MEIP) flowering tops showed antioxidant activity by inhibiting DPPH and hydroxyl radical, nitric oxide and super oxide anion scavenging, hydrogen peroxide scavenging, and reducing power activities. In addition, the MEIP found to contain a noticeable amount of total phenols, which play a major role in controlling antioxidants<sup>16</sup>.

### Mosquitoes Larvicidal activity:

The essential oil of *Ipomoea palmata* has remarkable larvicidal properties and its use as larvicide against mosquitoes should be explored as this plant grows abundantly in the wild. It is worthwhile to study extensively the larvicidal properties of the plants essential oil by isolating and identifying the active components that cause larval mortality and then use in field trails in order to assess their potential as an alternative to chemical larvicides<sup>17</sup>.

## CONCLUSION

The traditional uses of *Ipomoea palmata* are having Anti microbial, and Anti oxident activities, Anti-inflammatory activity, Mosquitoes Larvicidal activity. *Ipomoea palmata* leaves is an effective antimicrobial and antioxidant agent that can be used for folk medicine and will be a good source to treat and control many diseases. *I. palmata* proved a remarkable and significant anti-inflammatory activity. Phytochemical and chromatographic screening of this bioactive extract revealed the presence of flavonoids. The flowering tops showed antioxidant activity by inhibiting DPPH and hydroxyl radical, nitric oxide and super oxide anion scavenging, hydrogen peroxide scavenging, and reducing power activities. The essential oil of *Ipomoea palmata* has remarkable larvicidal properties and its use as larvicide against mosquitoes should be explored as this plant grows abundantly in the wild.

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