International Journal of Scientific Research in Science and Technology
Available online at : www.ijsrst.com
Print ISSN: 2395-6011 | Online ISSN: 2395-602X
doi : https://doi.org/10.32628/IJSRST2512146

A Review on Phytochemical Screening and Pharmacological Activities of Ethno Botanical Plants from Family: Convolvulaceae

Meet Dhokiya[1], Riya Kadia[2], Nainesh Modi[3]

[1]MSc Botany, Department of Botany, USSC, Gujarat University, Ahmedabad, Gujarat, India
[2]Research Scholar, Department of Botany, USSC, Gujarat University, Ahmedabad, Gujarat, India
[3]Professor, Department of Botany, USSC, Gujarat University, Ahmedabad, Gujarat, India

ARTICLEINFO

Article History:

Accepted : 11 Feb 2025
Published: 13 Feb 2025

Publication Issue :
Volume 12, Issue 1
January-February-2025

Page Number :
463-478

ABSTRACT

The Convolvulaceae family is generally known as the "Morning Glory Family". There are 20 genera and 158 species of the Convolvulaceae family reported in India; from them, 11 genera and 47 species are reported in Gujarat. Plants of this family are visible everywhere in Gujarat. Many kinds of plants from Convolvulaceae are used as medicine by our tribal people from ancient times. These types of plants are known as ethnobotanical plants. There are many plants like Ipomoea carnea (Jacq.), Ipomoea batatas (L.) Lam., Evolvulus nummularius (L.) L., Evolvulus alsinoides (L.), Merremia tridentata (L.) Hallier f., Argyreia speciosa (Linn F.) Sweet, and Argyreia cuneata (Willd.) Kar Gawl. that are commonly used as ethno medicine in our India. Three plant species were selected for a review focusing on their ethnomedicinal applications, phytochemical constituents, and pharmacological properties, named as I. carnea (Jacq.), A. speciosa (L. F.) Sweet and Merremia tridentata (L.) Hallier f. At the present time, the phytochemicals of the plants are mainly focused on the future and present medicinal uses due to their active potentials to treat many kinds of diseases. These plants are used for the different pharmacological activities like anti-bacterial, antioxidant, anti-diabetic, anti-inflammatory, and also as an ointment. Phytoconstituents like tannins, flavonoids, terpenoids, carbohydrates, alkaloids, polyphenols, etc. are present in it. I. carnea (Jacq.) leaves have potential to treat arthritis and skin diseases, and it contains phytoconstituents like neophytadiene and a high number of phenols. M. tridentata (L.) Hallier f. has the capacity to cure toothache, urinary infections, etc. it possesses several phytomolecules, like flavonoids such as diosmetin-7-o-diosmetin-7-o-β-glucosides, which is main active compound. A. speciosa (L. F.) leaves are used to treat gonorrhea, and chronic ulcer, that have epifriedelinol and quercetin as active constituents.

These plants have capability to heal wounds. Many pharmacological tests of these plants are done for the anti-cancer, cardiovascular, anti-microbial, and many more activities.

Keywords: Convolvulaceae, Climbers, Ethnobotanical plant, Medicinal Plant, Phytochemicals, Pharmacological activities.

I. INTRODUCTION

Climbers are an essential component of forests. Climbing plants have a substantial influence on forest dynamics, structure, and composition (Isnard and Silk, 2009). Especially in tropical and subtropical areas, climbing plants are one of the essential floral components, both environmentally and commercially. Fortunately, among several different habitat types, climbing species are the least explored. Foresters normally regard these plants as a barrier, and silviculturally maintained forest, they are usually eradicated (Sarvalingam and Rajendran, 2015). People use several kinds of climbing plants extensively for nutritional, therapeutic, and ethnic intentions, specifically those who reside within rural areas (Bongers *et al.*, 2005; Muhwezi *et al.*, 2009).

The Convolvulaceae family is commonly known as the "morning glory/bindweed family," since most of its members possess the flowers that are open from morning to afternoon. The Convolvulaceae family mainly comprises climbers (de Jussieu, 1789). There are approximately 12 tribes and 1650 species (Austin and Huáman, 1996). Each constituent's tropical, subtropical, and temperate zones are habitats for the most diverse and extensively spread species. There are roughly 11 genera, 47 species, and 4 varieties of the family in Gujarat (Shah, 1978). The family members are easily recognized by their funnel-shaped, radially symmetric corolla. Convolvulus, which means "to wind," is the Latin name for these plants because their branches are spiral in shape, leaves are simple, alternately arranged, and despite of presence of stipules, leaves are present (Frey, 1995; Rastogi, 1990). Researchers are interested in Convolvulaceae plants, as well as their associated oils, and extracts, due to their large phytochemical content, bioavailability protection, and therapeutic efficacy (Chen *et al.*, 2018). Numerous research studies have recently been carried out on the biological activities of Convolvulus species, including the antioxidant effect of *C. pilosellifolius* Desr. (AI-Rifai *et al.*, 2017) and *C. prostrates* Forssk. (Singh & Vora, 2017). Flavonoids, steroids, terpenoids, carbohydrates, amino acids, anthraquinones (AI-Rifai *et al.*, 2017), anthocyanidins, phenylpropanoids, coumarins, lignans, resins (Chen *et al.*, 2018), tannins, saponins, alkaloids, lipids (Manbir & Kalia, 2012), essential oils (Dehghan, Sarrafi, & Salehi, 2015), and derivatives of caffeoylquinic acid (EI-askary, Abou-Hussein, Shehab, & Sleem, 2006) are among the complex chemical profiles are reported from the convolvulus genus. *Evolvulus alsinoides* (L.) consists of several kinds of phytochemical constituents like lupeol, botulin, anthocyanidin, viridiflorol, glycerol, copaene, terpinolene, etc. (Elangovan *et al.,* 2013; Zahir & Kumaresan, 2015). Some researches on the phytochemicals of plant *E. nummularius* (L.) L. gives the presence of β-sitosterol, stigmasterol, carbohydrates, alkaloids, phenols, etc. (Dinda *et al.,* 2007). On the other hand, *Ipomoea batatas* (L.) Lam. Is composed of phytomolecules such as coumarins, triterpenoids, and Furano terpenoids, responsible for better health, also utilized as a source of food (Mohanraj & Shivashankar, 2014).

Phytochemicals represent those chemical compounds that naturally occur in plants. Preliminary phytochemical studies are beneficial for identifying chemical components in plant material that could be quantified. Several species of the Convolvulaceae family were identified from Rajasthan, and their phytochemical examination reveals the quantitative evaluation of total soluble sugars, soluble protein, starch, free amino acids, phenols, and lipids in the central region (Sharma & Tomar, 2023). Plants synthesize their secondary metabolites as unwanted products from their major metabolic pathways; these substances do not directly contribute to the growth, development, and continuing of the plant's offspring (Modi N., 2022). The phytochemicals are important for the growth, hormonal changes, disease resistance, etc. Although many of the alkaloids and glycosides are hazardous, if taken in the right amounts, they could be prescribed as medications (Kadia *et al.*, 2022).

A multidisciplinary study of the interaction between plants and people is referred to as ethnobotany (Birhanu *et al.*, 2015). Communities that have survived have carried down practical wisdom from the long history of human-plant interaction. The interdisciplinary and multidimensional analysis of such a knowledge system based on the direct relationship with the plants explains the usage of therapeutic herbs throughout ancient human history (Tapsell *et al.*, 2006). There are one or two local practitioners of traditional medicine, or a certain family of traditional medicine, known locally as "bhagats or Vaidya" in the majority of tribal settlements (Joshi *et al.*, 2013). These practitioners have learned how to treat patients, generally orally or through non-codified means, from the elders in the family, who have passed the information down through the generations. Because of their experience, they are able to identify the right plant from the numerous plant species that are present in their environment to treat a variety of ailments (Abbink, 1995; Punjani, 2010).

Pharmacological activities are the isolation of the drug compounds from plants that are used for the treatment of untreatable diseases. The pharmacological characteristics of phytochemicals make them useful in a number of therapeutic applications. The antioxidant activities can be treated with the flavonoids, carotenoids, and polyphenols. Further, the anti-inflammatory activities can be performed by many kinds of phytoconstituents. During the present time, the anti-cancer activities of the phyto molecules are the main focus for the researchers. The phytochemicals also have the potential to maintain cholesterol levels in the body (Sibley, 2024).

The researchers discovered tannins in the plant extract of *I. carnea* (Jacq.), which may have contributed to the plant's remarkable capacity to heal injuries. The reduction of free radicals represents one of the processes where these tannins may influence the healing of wounds (Raut & Kar, 2015). Studies have discovered that M. tridentata (L.) Hallier f. has the potential to treat various skin diseases and hemorrhoids, toothaches, etc. (Nayalina *et al.,* 2013). The seeds of *A. speciosa* (L. F.) Sweet have anti-inflammatory properties, spasmolytic and hypotensive qualities, and the roots possess numerous kinds of applications, including emollient, aphrodisiac, cardiotonic, digestive, brain tonic, and many more (Padhi *et al.*, 2013).

II. REVIEW LITERATURE

- **Ethnomedicinal values Phytochemicals and Pharmacological Activities of Selected Plants:**

1) ***Ipomoea carnea* (Jacq.)**

Kingdom: Plantae
Division: Angiospermae
Class: Dicotyledonae
Sub-Class: Gamopetalae
Series: Tubiflorae
Order: Solanales
Family: Convolvulaceae

Genus: *Ipomoea*
Species: *carnea*

Fig. 1: *Ipomoea carnea* (Jacq.) (https://indiabiodiversity.org/species/show/230038)

Ipomoea carnea (Jacq.), generally referred to as "Bush Morning Glory," appears as a twining herb or shrub with milky white sap that belongs to the Convolvulus family (Frey, 1995). This plant is extensively dispersed throughout the world, especially in the tropical regions of America, Argentina, Brazil, Bolivia, Pakistan, Sri Lanka, and other places. However, only two states in India, Chhattisgarh and Madhya Pradesh, have it (Singla *et al.,* 2021). Although *Ipomoea carnea* (Jacq.) is reaching a height of 6 meters, it may grow shorter in aquatic environments. Within a few years of steady growth, the stem thickens, develops into a large, thick trunk, and has multiple thick branches spreading from the base. The stem is upright, woody, hairy, and roughly cylindrical in shape. The leaves are alternate, simple, and petiolate. The bloom is seen in pink clusters of flowers throughout the summer and spring seasons (Sharma & Bachheti, 2013).

- ✓ **Common names**: Eng.: Bush Morning Glory, Hindi: Beshram, Behaya, Marathi: Beshram (Singla *et al.,* 2021).
- ✓ **Ethnomedicinal Values:** *I. carnea* (Jacq.) has been used in a form of medicine by the tribal areas. There is a wide range of ethnomedicinal uses of this plant as below.

Plant Part	Ethnomedicinal use	Reference
Leaves	Used to treat leukoderma	Vadivel & Brindha, 2017
	Suspends of leaves with coconut oil/sesame oil are used to treat wounds.	
	Leaf hot water extract is for reduce the teratogenic effect of cyclophosphamide and possesses antirheumatic qualities.	Fatima *et al.,* 2014
Bark	Latex/milky sap is used to treat skin conditions and leukoderma	Tomar *et al.,* 2012
Root	Boiled roots used to treat menstrual stimulant	Fatima *et al.,* 2014

Table 1: Ethnomedicinal values of *I. carnea* (Jacq.)

- ✓ **Phyto-chemicals:**

Analysis of chloroform and benzene extracts of these leaves via gas chromatography-mass spectrometry demonstrated the existence of components with insect-repellent characteristics, which include neophytadiene, 1-decanol, tetradecanoic acid, pentadecane, 1-iodo-2-methylundecane, trans-caryophyllene, eicosane, 2-butenoic acid, and cholestane-3-one. Additionally, quantitative phytochemical analysis of *I. carnea* (Jacq.) indicated that these plants possess significant amounts of flavonoids, tannins, and total phenols compared to other plants (Ambika & Nair, 2019; Sahayaraj & Ravi, 2008).

Different types of chemical compounds have been found from various portions of the plant, and their chemical structures are listed in the table below:

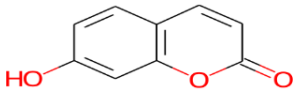
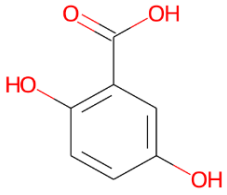
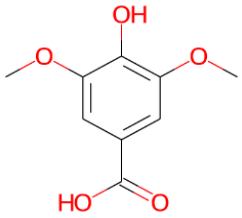
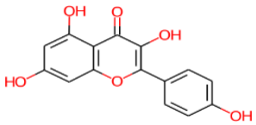
Plant Part	Phytocomponent	Structure	Reference
Root	Umbelliferon		ISBN:9770972795006
Stem	2,5-Dihydroxybenzoic acid		ISBN:9770972795006
Leaf	Triacontyl hexacosanoate		ISBN:9770972795006
Leaf	Syringic acid		ISBN:9770972795006
Flower	Kaempferol		ISBN:9770972795006, ISBN:9788185042114

Table 2: Phytoconstituents of Plant *I. carnea* (Jacq.)

According to Sahayaraj *et al.,* 2015, there are many other phytochemicals are found in the root, like 2-methylpropyle, 2-ethyle-1,3-dimethylbenzene, hexadecenoic acid, linoleic acid, etc.

As per Tirkey *et al.,* 1988, other valuable phytochemicals present in leaves like stearic acid, hexatriacontane, tetracontane, 3-diethylamino-1-propanol, etc. and the flower contains flavonoids, tannins, glycosides, carbohydrates, etc.

✓ **Pharmacological Activities**

1) Antimicrobial activity:

According to Adsul *et al.,* 2012, acetone extract of the *I. carnea* (Jacq.) had antimicrobial activity opposed to *Salmonella typhimurium* and *Proteus vulgaris,* which showed zones of inhibition of 7mm and 9mm, respectively. However, the methanolic extract of the *I. carnea* (Jacq.) shows inhibitory activity against the *Pseudomonas aeruginosa* with an 8mm zone of inhibition. The *I. carnea* (Jacq.) aqueous solution produces silver nanoparticles.

2) Wound Healing Activity:

There were amounts of tannins detected in the plant methanolic extract, which may have played a part in

the plant's apparent ability to heal injuries/wounds. These tannins may influence a number of wound-healing processes, including the chelation of reactive oxygen species and free radicals. The growth of fibroblasts and keratin cells and the stimulation of blood vessel contractions. The ethyl acetate and chloroform fractions extracts are not found to be as effective as compared to the methanolic extracts (Rout & Kar, 2015).

3) Hepatoprotective activity:

In the rat model of hepatic damage administered with carbon tetrachloride, an aqueous extract of *I. carnea* (Jacq.) leaves recovers the liver both its structural and functional indications in a dose-dependent way. The aqueous extract of leaves was reported to restore the activity of antioxidant enzymes and decrease lipid peroxidation in the liver tissue (de Balogh *et al.*, 1999).

4) Cardiovascular Activities:

Through salt extrusion or intracellular calcium release, the aqueous extract of *I. carnea* (Jacq.) had a beneficial inotropic impact on the isolated frog heart. By increasing the extract dosage, it was found that the first blockage lasted 5-10 seconds and might last up to 2 minutes (Bachhav *et al.,* 1999).

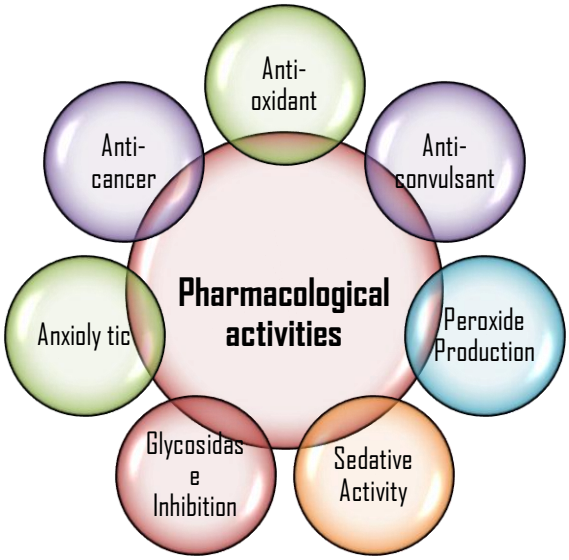


Fig 2: Pharmacological Activities of *I. carnea* (Jacq.)

2) ***Argyreia speciosa* (L. F.) Sweet:**

Kingdom: Plantae
Division: Angiospermae
Class: Dicotyledonae
Sub-class: Polypetalae
Series: Thalamiflorae
Order: Solanales
Family: Convolvulaceae
Genus: *Argyreia*
Species: *speciosa*

Fig 3: *Argyreia speciosa* (L. F.) Sweet (https://www.ayushvedah.com/druginfo.php?drugid=736)

A. speciosa (L. F.) Sweet, is also known as the "Elephant Creeper," belongs to the Convolvulaceae Family. This woody, tomentose-stemmed climbing shrub is mostly found in the Deccan, Karnataka, and the east slopes of the West Ghats at an elevation of 900 meters[2] (Warrier *et al.,* 1997). This is a large climber plant with a stout, white, and tomentose stem. Leaves are petiolate, glabrous, acute, ovate, and white tomentose persistently. Inflorescence of the flower is sub-capitate cyme. Fruit is in form of glabrous apiculate (Kirtikar, 1981).

- ✓ **Common names**: Eng.: Elephant Creeper, Guj.: Samudrusoka, Samndrashoka, Hindi: Sumundar-ka-put (Gupta & Tandon, 2004).
- ✓ **Ethnomedicinal Values**:

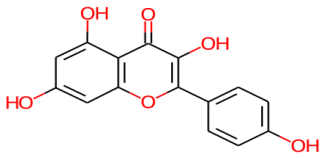
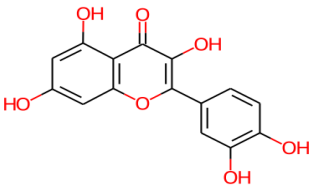
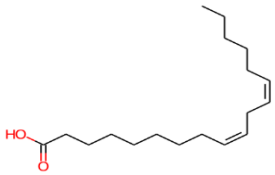
There are many kinds of traditional medicinal values present of the plant *A. speciosa* (L. F.) Sweet. Some of the medicinal values are as below.

Plant part	Ethnomedicinal use	Reference
Root	Dried root powder with country liquor (3:1) to cure gonorrhea.	Pal & Jain, 1998; Joseph *et al.,* 2011
	Root powder is taken with the cow's milk cure for painful urine discharge.	
	Root inoculates with goat milk (3:1) to treat male sexual disorders.	
Leaf	Fresh leaves juice with Karanja seed oil use to cure obesity and excessive fat accumulations.	
	Young leaf paste used on smallpox treatment.	
	Abaxial side of leaf applied on boils for suppuration.	

Table 3: Ethnomedicinal uses of *A. speciosa* (L. F.) Sweet

✓ **Phytochemicals:**

The leaves contained a high concentration of quercetin. The petroleum ether extracts of leaves generated trichotanol, epifriedelinol acetate, epifriedelinol, and beta-sitosterole. Whenever the leaves were extracted with 90% methanol, the flavonoids, quercetin and kaempferol were identified, as well as the glycoside kaemperol-3-o-1 rhamnopyranoside. The ethanolic extract of seeds shows the presence of a mixture of three alkaloids, but only one alkaloid named ergometrine was characterized from that (Sohrab *et al.,* 1992).

Plant part	Phytochemical	Structure	Reference
Leaf	Kaempferol		ISBN:9788172362089
Leaf	Quercetin		ISBN:9788172361150
Seed	Linoleic acid		ISBN:9788171360536

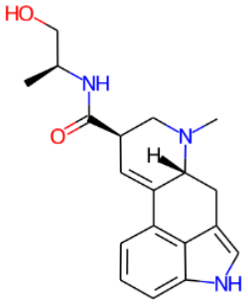
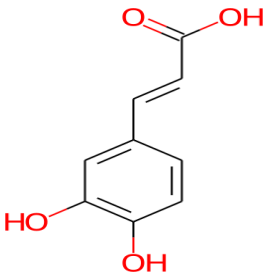
Plant part	Phytochemical	Structure	Reference
Seed	Ergometrine		ISBN:9780387706375
Fruit	Caffeic acid		ISBN:9770972795006

Table 4: Phytochemicals of *A. speciosa* (L. F.) Sweet

✓ **Pharmacological Activities**

There are numerous pharmacological activities carried out by *A. speciosa* (L. F.) Sweet from their active phytoconstituents.

1) Aphrodisiac Activity

Aphrodisiac action has been demonstrated by the plant's root, bloom, and to a lesser extent leaves, as demonstrated by the mice's increased mounting behavior. After analyzing several root extracts, the alcohol extract was shown to have the activity. Additionally, the male mice provided with roots or flowers indicated significant improvements in their potential to mate. As a result, the plant shows promise for becoming a drug that efficiently boosts male sex and alters the sex ratio in a way that benefits men (Subramaniam *et al.,* 2007).

2) Analgesic Activity:

Root of *A. speciosa* (L. F.) Sweet was extracted in methanol and applied to models of inflammation and discomfort. While *A. speciosa* (L. F.) Sweet at the dose of (300 mg/kg) demonstrated a significant increase in latency to tail flick in the tail immersion method and raised mean basal reaction time in the hot plate method, the analgesic activity of *A. speciosa* (L. F.) Sweet at the dose of (300 mg/kg) demonstrated a significant decrease in acetic acid-induced writhing (Bachhav *et al.,* 2007).

3) Immunomodulatory activity:

In mice, oral treatment of the ethanolic extract of *A. speciosa* (L. F.) Sweet root at doses of 50, 100, and 200 mg/kg enhanced the delayed-type hypersensitivity reaction brought on by oxazolone and sheep red blood cells (SRBC) in a dose-dependent manner. It markedly increased the mice's reaction to SRBC in terms of circulating antibody titer production. As had no effect on the phagocytosis of macrophages. The total WBC count was considerably reduced by a long-term ethanol extract treatment, which additionally reversed the myelosuppressive effects of cyclophosphamide (Gokhale *et al.,* 2003).

4) Antifungal Activity:

The antifungal properties of hexadecanoyl p-hydroxycinnamate and scopoletin, products were separated from the root, were evaluated against *Alternaria alternata, Fusarium fusiformis, and F. semitectum* at a 1000 ppm concentration. It was determined that 100% inhibition against *A. alternata* was obtained by both medications. The substances also demonstrated phytotoxicity by inhibiting the

growth of the roots of wheat seeds that were just beginning to germinate (Shukla *et al.,* 1999).

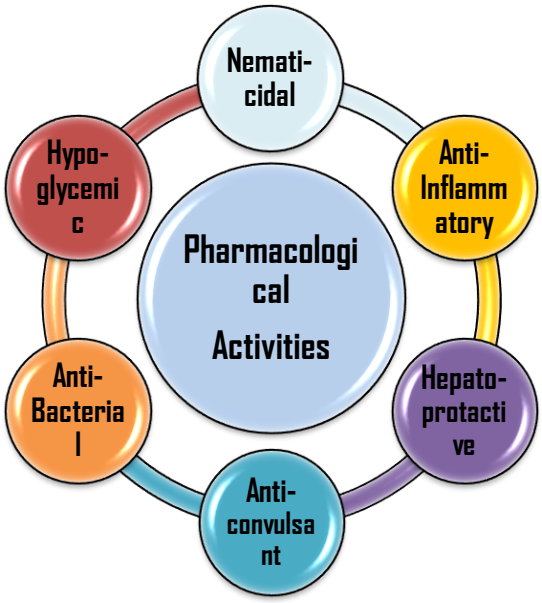


Fig. 4: Pharmacological Activities of *A. speciosa* (L. F.) Sweet

3) ***Merremia tridentata (L.) Hallier f.***

Kingdom: Plantae	
Division: Angiospermae	✓
Class: Dicotyledonae	
Sub-class: Polypetalae	✓
Series: Thalamiflorae	
Family: Convolvulaceae	
Genus: *Merremia*	
Species: *tridentata*	

Fig. 5: *M. tridentata* (L,) Hallier f. (https://www.keralanaturals.com/product/jhamar-bel-sampoorn-poudha-merremia- tridentata/)

Merremia tridentata (L.) Hallier f. is an evergreen plant with a dense root system considered to be a member of the Convolvulaceae family. It is widely spread throughout India and is popularly referred to as 'Prasarani.' This is an herb plant that grows prostrate on land and produces a root system from its nodes. The leaves are simple, linear, narrow, and lanceolate; they possess tiny angled lobes at the base, so it's called tridentate. Flowers are single, heterosexual, and uniform in nature. Stems are prostrate, long, angular, and glabrous but not a twiner (Sabu & Brijithlal, 2024).

Common names: Hindi: prasarani, Guj.: Bhintagariyo (Sabu & Brijithlal, 2024).

Ethnomedicinal values:

M. tridentata (L.) Hallier f. is used worldwide as a medicine traditionally. The whole plant has potential as medicine.

Plant Part	Ethnomedicinal Use	Reference
Root/Stem/Leaves/Fruit/Flowers	Macerated plant material used for the cure of leprosy, piles, swellings, toothache, urinary infections, rheumatism, stiffness of joints, hemiplegia.	Sowndhararajan *et. al.,* 2010
	Oil derived from whole plants mixed with coconut oil is used to cure dandruff.	Ambika and Nair, 2019
Root	Extract of root use for treatment of diabetes.	Arunachalam & Parimelazhagan, 2012
Leaves	Oil derived from leaves is mixed with coconut oil and used to treat skin diseases.	Ambika and Nair, 2019

Table 5: Ethnomedicinal Values of *M. tridentata* (L.) Hallier f.

✓ **Phytochemicals:**

Phyto-molecular analysis detects the presence of phytoconstituents like luteolin, glycoflavones, 7-O-methylapigenine, gentisic acid, vanillic acid, lutein, diosmetin, 4-methoxy benzoic acid, and many more. The phytomolecules like sugar, tannins, alkaloids, phenols, sugars, phytosterol, quinones, and saponins were detected in the ethanolic extract. The constituents found in ethyl acetate extracts are quinines, phytosterols, and flavonoids. These metabolites show different therapeutic activities of the plant. (Aron *et al.,* 2013).

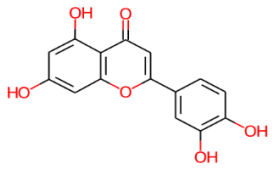
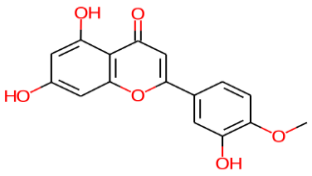
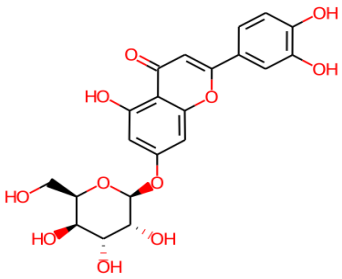
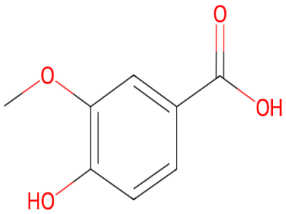
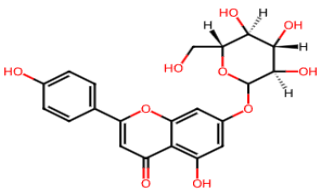
Plant Part	Phytochemical	Structure	Reference
Whole Plant	Luteolin		ISBN:9788190595216
Aerial Part	Diosmetin		ISBN:9788172362461
Aerial Parts	Luteolin 7-O-beta-d-glucopyranoside		ISBN:9780387706375
Aerial Parts	Vanillic Acid		chemspider.com/Chemical-Structure.8155.html
Stem	Cosmosiin		chemspider.com/Chemical-Structure.18668699.html

Table 6: Phytochemicals of *M. tridentata* (L.) Hallier f.

✓ **Pharmacological Activities:**

There are many kinds of bioactive studies of plant *M. tridentata* (L.) Hallier f. that were done.

1) Anti-Bacterial Activity:

The leaf extract made with methanol was identified as having antibacterial properties against *Vibrio parahaemolyticus, Staphylococcus aureus, Escherichia coli,* and *Bacillus subtilis*, as well as antifungal properties against yeast. The methanolic extract of stem only shows significant antibacterial activities against Bacillus subtilis and Staphylococcus aureus, two gram-positive pathogens (Pavithra *et al.,* 2010).

2) Anti-Diabetic Activity:

In streptozotocin-induced diabetic rats, the aqueous root extract exhibited anti-diabetic effects in contrast with glibenclamide. The phytochemicals in the extract may be responsible for the remarkable decrease in the high blood glucose level and lipid profile in streptozotocin-induced diabetic mice (Arunachalam & Parimelazhagan, 2012). In rats with alloxan-induced diabetes, the flavonoid components found in *M. tridentata* (L.) Hallier f. extract, such as apigenin, cosmosiin, cymaroside, luteolin, and quercetin, exhibit higher hypoglycemic effects compared to drugs like glibenclamide and metformin. A molecular docking study indicates that the most appealing ligands on a range of anti-diabetic targets, such as α-amylase and α-glucosidase, are cosmosiin and cymaroside molecules due to their hypoglycemic action (Vo Van *et al.,* 2022).

3) Wound Healing Activity:

The *M. tridentata* (L.) Hallier f. plant has been researched for its capability to promote wound, excision, and dead space wound treatment in albino mice. Mice were provided with petroleum ether, solvent ether, butanol, butanone, or ethyl acetate *M. tridentata* (L.) Hallier f. fraction in the suspension using Tween-80, and the results were compared to those of control animals. High tensile strength, which is necessary for efficient wound healing activity, was created by the ethyl acetate fraction. Another time, the flavonoids found in the plant may encourage this process of wound healing (Bidkar *et al.,* 2009; Ambika & Nair, 2019).

4) Anti-Arthritic Properties:

The whole plant's ethanolic extract has been experimentally proven to have anti-arthritic properties. Higher anti-arthritic potential was demonstrated in the in vivo investigation on male albino rats utilizing the full Freuds adjuvant-induced arthritis model with indomethacin as the usual medication (Kamalutheen, 2009).

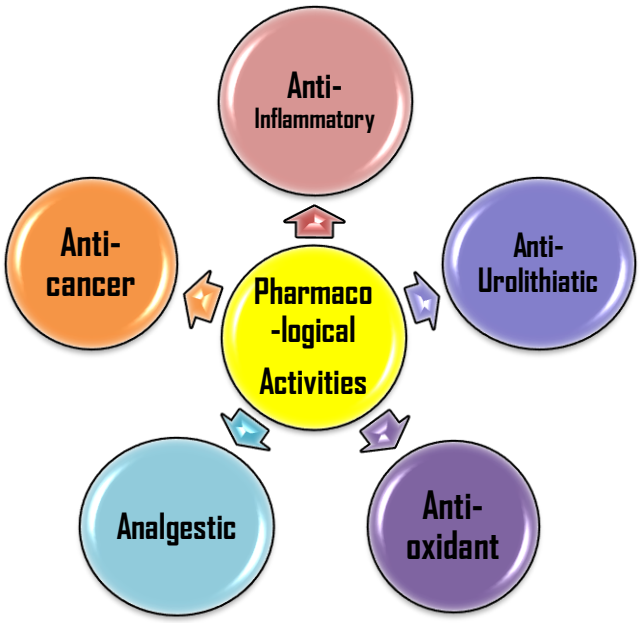


Fig 6: Pharmacological Activities of *M. tridentata* (L.) Hallier f.

III.DISCUSSION

Plants are a significant source of components that could be used to create novel medicines. There are numerous articles on the different pharmacological activities of plants, like antifungal, antiviral, and antibacterial qualities of plants. Consequently, these findings have aided in the creation of novel medications for human therapeutic usage (Sharma & Modi, 2023). The use of plants for therapeutic reasons has a long history in traditional medical practices worldwide. People have been using these plants for medical purposes since ancient times, and many

traditional healing practices still use plant-based remedies today (Devendra *et al.,* 2012).

The plants of the Convolvulaceae family are cosmopolitan in nature. It can easily be observed near wetlands, wastelands, and dense, tropical, and subtropical areas. The individuals of this family possess many different types of active phytoconstituents. Due to their high phytochemical availability and activity, it's used as a medicine in many areas of India. In the tribal area of India, the plants of Convolvulaceae are used as ethnomedicine as well as a good food source. In Gujarat, Maharashtra, and Andhra Pradesh, the species *Ipomea aquatica* Forsskal and *Ipomea batatas* (L.) Lam. are being used as a vegetable by many peoples and also used for the treatment of epilepsy (Sivaraman & Muralidaran, 2010). *Ipomea hederifolia* (L.) is used in Tamil Nadu and West Bengal for analgesic activities and skin disease treatment (Sharma *et al.,* 2009). *Argyreia roxburghii* Choisy roots are used as a tonic for senselessness and epilepsy in Assam (Baruah *et al.,* 2014)

These selected three plants have many active phytoconstituents but mostly Alkaloids, sterols and the flavonoids are the main of it. They have potential to treat many biological activities. These plants are used as medicine from very old time in India, In Ayurveda and also by General tribal peoples. They have active capability to heal the wound and also trat the diabetes which is most common problem in all-over the world. The one species *Ipomea carnea* (Jacq.) also use for the snakebite treatment. At present, the main focus of researcher is to find capability of the Convolvulaceae plants to treat Cancer, CNS problems etc., Deu to its high availability and it's easy to grow.

IV. CONCLUSION

In simple terms, the current exploration substantially improves our knowledge of plants species of the Convolvulaceae family which are using as medicinal purpose in India. The Genus Ipomea is largest genus of the family and can see anywhere in India. The Convolvulaceae family has an extensive amount of pharmacological and ethnobotanical capabilities although its worldwide reputation for its aesthetic appeal. Three Plant species *I. carnea* (Jacq.), *M. tridentata* (L.) Hallier f*., A. speciosa* (L. F.) Sweet from the family have been chosen in this review to illustrate their different applications. These species show how Convolvulaceae significantly contribute to human well-being, from traditional therapeutic practices to ongoing research studies.

REFERENCES

[1]. Abbink, J. (1995). Medicinal and ritual plants of the Ethiopian Southwest: an account of recent research. Indigenous knowledge and development monitor, 3(2), 6-8.

[2]. Adsull, V. B., Khatiwora, E., Rasika Torane, R. T., & Deshpande, N. R. (2012). Antimicrobial activities of Ipomoea carnea leaves.

[3]. Al-Rifai, A. A., Aqel, A., Al-Warhi, T., Wabaidur, S. M., Al-Othman, Z. A., & Badjah-Hadj-Ahmed, A. Y. (2017). Antibacterial, antioxidant activity of ethanolic plant extracts of some Convolvulus species and their DART-ToF-MS profiling. Evidence-based Complementary and Alternative Medicine, 2017(1), 5694305.

[4]. Ambika, A. P., & Nair, S. N. (2019). Wound healing activity of plants from the convolvulaceae family. Advances in wound care, 8(1), 28-37.

[5]. Aron, S., Bose N, M. F. J., & Mehalingam, P. (2013). Pharmacognostic evaluation of stem, leaves and roots of Merremia tridentata (L.) Hallier f.

[6]. Arunachalam, K., & Parimelazhagan, T. (2012). Antidiabetic activity of aqueous root extract of Merremia tridentata (L.) Hall. f. in streptozotocin–induced–diabetic rats. Asian

Pacific journal of tropical medicine, 5(3), 175-179.

[7]. Austin, D. F., & Huáman, Z. (1996). A synopsis of Ipomoea (Convolvulaceae) in the Americas. Taxon, 3-38.

[8]. Bachhav, K. V., Burande, M. D., Rangari, V. D., & Mehta, J. K. (1999). Effect of aqueous extract of Ipomoea carnea leaf on isolated frog and mouse heart.

[9]. Bachhav, R. S., Gulecha, V. S., & Upasani, C. (2009). Analgesic and anti-inflammatory activity of Argyreia speciosa root. Indian Journal of Pharmacology, 41(4), 158-161.

[10]. Baruah, N. C., Das, S., & Yadav, S. K. (2014). Preliminary phyto-chemical analysis and antioxidant activities of methanol extract of Argyreia roxburghii Choisy.

[11]. Bentham, G., & Hooker, J. D. JD 1862-1883. Genera Plantarum. Vols. 1-3. Lovell Reeve & Co., London.

[12]. Bidkar, A. A., Sherje, A. P., Gujar, K. N., Bagul, U. S., Miniyar, P. B., & Aphale, S. A. (2009). Phytochemical and pharmacological investigation of extracts of Merremia tridentata Linn. (Convolvulaceae). Journal of Natural Remedies, 9(1), 79-84.

[13]. Birhanu, Z., Endale, A., & Shewamene, Z. (2015). An ethnomedicinal investigation of plants used by traditional healers of Gondar town, North-Western Ethiopia. Journal of medicinal plants studies, 3(2), 36-43.

[14]. Bongers, F. J. J. M., Parren, M. P. E., Swaine, M. D., & Traore, D. (2005). Forest climbing plants of West Africa: introduction.

[15]. Chen, G. T., Lu, Y., Yang, M., Li, J. L., & Fan, B. Y. (2018). Medicinal uses, pharmacology, and phytochemistry of Convolvulaceae plants with central nervous system efficacies: A systematic review. Phytotherapy Research, 32(5), 823-864.

[16]. de Balogh, K. K., Dimande, A. P., van der Lugt, J. J., Molyneux, R. J., Naudé, T. W., & Welman, W. G. (1999). A lysosomal storage disease induced by Ipomoea carnea in goats in Mozambique. Journal of Veterinary Diagnostic Investigation, 11(3), 266-273.

[17]. de Jussieu, A. L. (1789). Genera plantarum secundum ordines naturales disposita juxta methodum in horto regio parisiensi exaratam, anno 1774. veuve Herissant.

[18]. Dehghan, H., Sarrafi, Y., & Salehi, P. (2015). Chemical composition of the essential oil of Convolvulus Persicus L. Journal of Essential Oil-Bearing Plants, 18(3), 592-595.

[19]. Devendra, B. N., Srinivas, N., & Solmon, K. S. (2012). A comparative pharmacological and phytochemical analysis of in vivo & in vitro propagated Crotalaria species. Asian Pacific Journal of Tropical Medicine, 5(1), 37-41.

[20]. Dinda, B., Ghosh, B., Arima, S., Sato, N., & Harigaya, Y. (2007). Chemical constituents of Evolvulus nummularius.

[21]. Elangovan, K., Supriya, K., Murugesan, K., & Aravind, R. (2013). Screening of phytochemicals and in vitro antioxidant activity of Evolvulus alsinoides L. J Acad Industr Res, 2(4), 230-234.

[22]. El-Askary, H. I., Abou-Hussein, D. R., Shehab, N. G., & Sleem, A. A. (2006). Bioactive caffeoylquinic acid derivatives from Convolvulus hystrix Vahl. Bull Fac Pharm Cairo Univ, 44(3), 1.

[23]. Fatima, N., Rahman, M. M., Khan, M. A., & Fu, J. (2014). A review on Ipomoea carnea: pharmacology, toxicology and phytochemistry. Journal of Complementary and Integrative Medicine, 11(2), 55-62.

[24]. Fernandes, M. C., & Krishnan, S. (2016). Phytochemical analysis of Strobilanthes blume species from Northern Western Ghats of India.

[25]. Frey, R. (1995). Ipomoea carnea ssp. fistulosa (Martius ex Choisy) Austin: taxonomy, biology and ecology reviewed and inquired.

[26]. Gokhale, A. B., Damre, A. S., & Saraf, M. N. (2003). Investigations into the immunomodulatory activity of Argyreia

speciosa. Journal of ethnopharmacology, 84(1), 109-114.

[27]. Gupta, A. K., & Tandon, N. (2004). Reviews on Indian medicinal plants.

[28]. Herborne, J. B. (1973). Phytochemical methods. A guide to modern techniques of plant analysis, 2, 5-11.

[29]. Isnard, S., & Silk, W. K. (2009). Moving with climbing plants from Charles Darwin's time into the 21st century. American Journal of Botany, 96(7), 1205-1221.

[30]. Joseph, A., Mathew, S., Skaria, B. P., & Sheeja, E. C. (2011). Medicinal uses and biological activities of Argyreia speciosa sweet (Hawaiian baby woodrose)-an overview.

[31]. Joshi, E. B., Jain, B. K., Joshi, P. N., & Soni, H. B. (2013). Prevalence of traditional medications through native floral elements among tribal communities of Kachchh arid ecosystem, Gujarat, India. International journal of environment, 2(1), 184-201.

[32]. Kadia, R., Bhavsar, S., Sapra, P., Pandya, H., Mankad, A., & Modi, N. (2022). Phytochemical Investigation and Antioxidant Activity of Ethnomedicinal Plants from Ratanmahal and Udalmahuda Forest, Dahod.

[33]. Kamalutheen, M., Gopalakrishnan, S., & Ismail, T. S. (2009). Anti-inflammatory and Anti-arthritic Activities of Merremia tridentate (L.) Hall. f. Journal of chemistry, 6(4), 943-948.

[34]. Kaur, M., & Kalia, A. (2012). Convolvulus arvensis: A useful weed. Int J Pharm Sci, 4(1), 38-40.

[35]. Kirtikar, K. R. (1981). Indian Medicinal Plants, vol. 3 of Lalit Mohan Basu Publication.

[36]. Mascarenhas, M. E., Mandrekar, C. R., Marathe, P. B., & Morais, L. J. (2017). Phytochemical screening of selected species from Convolvulaceae. Int. J. Curr. Pharm. Res, 9(6), 94-97.

[37]. Modi, N. (2022). Phytochemical Analysis and Antioxidant Activity of Dalechampia scandens var. Cordofona (Hochst. ex A. Rich) Muell. Arg.

[38]. Muhwezi, O., Cunningham, A. B. & Bukenya-Ziraba, R. (2009). Lianas and livelihoods: The role of fibrous forest plants in food security and society around Bwindi Impenetrable National Park, Uganda. Economic botany, 63, 340-352.

[39]. Neyanila, S. K., Prakash, Y., & Gopal, V. (2013). Preliminary phytochemical and pharmacognostical standardization of aerial parts of Merremia tridentata (linn) Hallier. f. Convolvulaceae. International Journal of Pharmaceutical Research & Analysis, 3(2), 99-105.

[40]. Oza, K. K., Gondaliya, A. D., Rajput, K. S., & Raole, V. M. (2022). An eco-sociological analysis of useful climbers of family Convolvulaceae Juss. Journal of Traditional and Folk Practices (JTFP), 10(1 & 2).

[41]. Padhi, M., Mahapatra, S., Panda, J., & Mishra, N. K. (2013). Traditional uses and phytopharmacological aspects of Argyreia nervosa. J Adv Pharm Res, 4(1), 23-32.

[42]. Pal, D. C. & Jain, S. K. 1998. Tribal medicine, Naya Prokash

[43]. Punjani, B. L. (2010). Herbal folk medicines used for urinary complaints in tribal pockets of Northeast Gujarat.

[44]. Rastogi, R. M. (1990). Compendium of Indian medicinal plants. Central Drug Research Institute, Lucknow, India, 1, 388-389.

[45]. Remya Mohanraj, R. M., & Subha Sivasankar, S. S. (2014). Sweet potato (Ipomoea batatas [L.] Lam)-a valuable medicinal food: a review.

[46]. Rout, S. K., & Kar, D. M. (2015). Antimicrobial, antioxidant and wound healing activity of the crude extract and different fractions of methanolic extract of Ipomoea carnea.

[47]. Sabu, J. A., & Brijithlal, N. D. (2024). The pharmacological aspects of Merremia tridentata:

A Comprehensive review. The Journal of the Indian Botanical Society, 104(01), 50-53.

[48]. Sahayaraj, K., & Ravi, C. (2008). Preliminary phytochemistry of Ipomea carnea jacq. and Vitex negundo Linn. leaves. Int. J. Chem. Sci, 6(1), 1-6.

[49]. Sahayaraj, K., Kombiah, P., Dikshit, A. K., & Rathi, M. J. (2015). Chemical constituents of essential oils of Tephrosia purpurea and Ipomoea carnea and their repellent activity against Odoiporus longicollis. Journal of the Serbian Chemical Society, 80(4), 465-473.

[50]. Sahu, P. K., & Gupta, S. (2014). Medicinal plants of Morning glory: Convolvulaceae Juss. of Central India (Madhya Pradesh and Chhattishgarh). Biolife, 2(2), 463-469.

[51]. Sarvalingam, A., & Rajendran, A. (2015). Climbing plants of the southern Western Ghats of Coimbatore in India and their economic uses.

[52]. Shah, G. L. (1978). Flora of Gujarat, Part I and II. Sardar Patel University Vallabh Vidyanagar, 1074.

[53]. Sharma, A., & Bachheti, R. K. (2013). A review on Ipomoea carnea.

[54]. SHARMA, A., & TOMAR, S. (2023). Phytochemical analysis of some selected species of the family Convolvulaceae occurring in Central Rajasthan. Journal of Survey in Fisheries Sciences, 10(2S), 3858-3862.

[55]. Sharma, K., Arora, V., Rana, A. C., & Bhatnagar, M. (2009). Anxiolytic effectof Convolvulus pluricaulis Choisy petals on elevated plus maze model ofanxiety in mice. Journal of Herbal Medicine and Toxicology, 3(1), 41–46.

[56]. Sharmaa, P., & Modib, N. (2023). INVESTIGATING THE QUALITATIVE AND QUANTITATIVE PHYTOCHEMICAL ANALYSIS OF ACANTHOCEREUS TETRAGONUS (CACTACEAE FAMILY) ALONG WITH THE ANTIOXIDANT ACTIVITY.

[57]. Shukla, Y. N., Srivastava, A., Kumar, S., & Kumar, S. (1999). Phytotoxic and antimicrobial constituents of Argyreia speciosa and Oenothera biennis. Journal of ethnopharmacology, 67(2), 241-245.

[58]. Sibley, D. R. (2024). The Enduring Impact of Pharmacological Reviews–Editorial. Pharmacological Reviews, 76(5), 620-621.

[59]. Singh, S., & Vora, S. (2017). Studies on alkaloids extraction, identification by thin layer chromatography from some medicinal plants and evaluating its antimicrobial potential. European Journal of Biomedical and Pharmaceutical Sciences I, 4(6), 627-631.

[60]. Singla, C., Sharma, A., & Dhiman, A. (2021). An update on phytochemistry and therapeutic properties of Ipomoea carnea. Journal of Pharmacognosy and Phytochemistry, 10(1), 01-06.

[61]. Sivaraman, D., & Muralidaran, P. (2010). CNS depressant and antiepileptic activities of the methanol extract of the leaves of Ipomoea aquatica Forsk. Journal of Chemistry, 7(4), 1555-1561.

[62]. Sohrab Khan, M., Kamil, S. M., & Ilyas, M. (1992). Phytochemical investigation on the leaves of Argyreia speciosa. Journal of the Indian Chemical Society, 69(2).

[63]. Sowndhararajan, K., Joseph, J. M., Arunachalam, K., & Manian, S. (2010). Evaluation of Merremia tridentata (L.) Hallier f. for in vitro antioxidant activity. Food science and biotechnology, 19, 663-669.

[64]. Subramoniam, A., Madhavachandran, V., Ravi, K., & Anuja, V. S. (2007). Aphrodisiac property of the elephant creeper Argyreia nervosa. Journal of Endocrinology and Reproduction, 82-85.

[65]. Tapsell, L. C., Hemphill, I., Cobiac, L., Sullivan, D. R., Fenech, M., Patch, C. S., ... & Inge, K. E. (2006). Health benefits of herbs and spices: the past, the present, the future.

[66]. Tomar, J. B., Bishnoi, S. K., & Saini, K. K. (2012). Healing the tribal way: ethno-medicinal formulations used by the tribes of Jharkhand, India.

[67]. Vadivel, V., & Brindha, P. (2017). Wound Healing Potential of Ipomoea carnea Jacq.: An Un-Explored Herb Used in Indian Traditional System of Medicine. Global Journal of Pharmacy & Pharmaceutical Sciences, 3(1), 1-5.

[68]. Warrier, P. K., Nambiar, V. P. K., & Ramankutty, C. (1997). Indian Medicinal Plants of India. Orient Longman, Chennai, I, 191-193.

[69]. Zahir, H. A., & Kumaresan, S. (2015). GC–MS Analysis and phytochemical studies of Evolvulus alsinoides L. Int J Nano Corros Sci Eng, 2, 58-63.