



## PHYTOCHEMICAL AND PHARMACOLOGICAL STUDY ON *ARGEMONE MEXICANA* LINN (PAPAVERACEAE)

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Received on: 11-08-2016; Revised on: 24-09-2016; Accepted on: 01-01-2017

### ABSTRACT

*Argemone mexicana* L. belong to family Papaveraceae, commonly known as “Prickly Poppy” and “Satyanashi”. It grow as weed in almost all part of India. The *plant* have many alkaloid, terpenoids, glycosides and flavanoids which are responsible for many pharmacological activities. This review aims at describing the botanical description, classification, phytochemical profiles of various parts of *Argemone mexicana*.

**Keywords:** Medicinal, Pharmacological and Phytochemical.

### INTRODUCTION

Medicinal plants are of noble worthiness to mankind. They are nature’s offering human beings to regulate a sickness free healthful life. They performance a necessary role in preserving our health [1]. Medicinal plants are considerably serviceable and economically needed. The receive dynamic phytoconstituents that are used in the manage of various human ailments [2].

*Argemone mexicana* L. (Papaveraceae), commonly known as Prickly Poppy in English and Premathandu in Tamil found in Mexico and now has widely naturalised in the United States, India, Bangladesh and Ethiopia. It occurs as wasteland weed in almost every part of India [3]. The plant prefers light sandy soils, requires well-drained soil and can grow in nutritionally poor soil and also prefers acid, neutral and basic (alkaline) soils [4].

*A. mexicana* is considered as an important medicinal plant in India; the yellow juice, which exudes when the plant is injured, has long been used in India as traditional medicine for dropsy, jaundice, ophthalmia, scabies and cutaneous affections [5],[6],[7]. *A. mexicana* L. possess the analgesic, narcotic, antispasmodic and sedative properties. The fresh

yellow, milky, seed extract contains proteindissolving substances which are effective in the treatment of warts, cold sores, cutaneous infections, skin diseases, itches and also in dropsy and jaundice. In Mexico, the seeds have been used as an antidote to snake poisoning [8], [9]. Leaves and seeds are also reported to find application in maintaining normal blood circulation and cholesterol level in human body [10]. These plant parts possess anti-venom property as well [11], [12]. The present review deals with the phytochemical and pharmacological aspects of *A. mexicana*.

### TAXONOMY

Kingdom : Plantae  
 Superdivision : Spermatophyta  
 Division : Magnoliophyta  
 Class : Magnliopsida  
 Subclass : Magnoliidae  
 Order : Papaverales  
 Family : Papaveraceae  
 Genus : *Argemone*  
 Species : *Argemone mexicana*

### VERNACULAR NAME

English : Mexican prickly poppy  
 Hindi : Shialkanta, Satyanashi

Rajasthani : Satyanashi, Daturi  
Gujrati : Darudi  
Marathi : Daruri, Firangi-kote-pavola, dhotara.  
Sanskrit : Brahmadandi, Pitopushpa, Srigalkanta, Svarnakshiri.  
Malyalam : Ponnummattu, Kantankattiri

#### **BOTANICAL DESCRIPTION**

*Argemone mexicana* is an annual herb, growing up to 100-140 cm with a slightly branched tap root. Its

stem is branched and usually extremely prickly. Leaves are thistle-like and alternate, without leaf stalks (petioles), toothed (serrate) and the margins are spiny. The grey-white veins stand out against the bluish-green upper leaf surface. The stem is oblong in cross-section. Flowers are terminal and solitary, yellow and of 2.5-5 cm diameter. Fruit are capules. Seeds are small about 1 mm in diameter, very numerous, nearly spherical, covered in a fine network of veins, brownish black.



**Figure: The Plant of *Argemon maxicana***

## PHYTOCHEMICALS

The whole plant of *A. mexicana* was reported to possess isoquinoline alkaloids such as berberine, cheilanthifoline, coptisine, muramine, scoulerine, stylopine, cryptopine, thalifone, sanguinarine, protopine, optisine, chelerytherine and benzyloisoquinoline alkaloids [13],[14],[15],[16],[17]. Various isoquinoline alkaloids viz. berberine, cryptopine, coptisine, muramine, scoulerine, stylopine, cheilanthifoline, sanguinarine, sarguinarine, chelerytherine, sanguinarine, thalifoline and protopine have been reported from the plant [18]. Seed oil otherwise called as Argemone oil reported to contain sanguinarine and dihydrosanguinarine. It also contains palmitic, myristic, oleic and linoleic acids [9].

## PHARMACOLOGICAL ACTIVITY

**Antibacterial activity:** Many reports have been carried out to investigate the antibacterial determines of *A. mexicana* extracts. [19]. *Argemone mexicana* leaves and seeds extracts showed considerable antibacterial activity [20],[21].

**Antimicrobial activity:** Stem and essential oil of *A. mexicana* was found to be good antimicrobial activity [22]. The inhibition activity of plants extracts against the growth of microorganisms was attributed to the presence of antioxidants [23].

**Antidiabetic activity:** Aqueous extract of aerial parts of *A. mexicana* at a dose of 200 and 400 mg/kg body weight was reported to have hypoglycemic efficacy in alloxaninduced diabetic rats; significant reduction in blood glucose levels, plasma urea, creatinine, triacylglyceride, cholesterol values and recovery in body weight compared to diabetic control rats and the standard drug treated rats are found when treated with the aqueous extract at a dose of 400 mg/kg body weight [24].

**Wound healing activity:** Wound healing activity using excision, incision and dead space wound

models in Wistar albino rats with different extracts of *A. mexicana* leaves. The results revealed that the treatment with methanol extract of leaves of *A. mexicana* accelerated wound healing agent in rats. Significant wound healing activity of petroleum ether and butanol fractions of ethanol extract of *A. mexicana*, containing some sterols, alkaloids, proteins and carbohydrates, was also reported in albino rat model by Patil and his group [25].

**Lousicidal activity:** lousicidal efficacy of aqueous leaf extract of *A. mexicana* by conducting mortality and repellency tests on tropicalis peters and found lousicidal activity with 73% mortality [26].

**Antipyretic activity:** The antipyretic potential showed by the two doses of drug extract might be attributed to the phytochemical constituents such as alkaloids, glycosides, flavonoids, phenolic compounds as tannins, saponins found in the water aqueous extract of *Argemone mexicana* leaves [27],[28],[29],[30]. These components exert their biological action according to a mechanism of cyclooxygenase enzymes I and II inhibition (COX-1 and COX-2) which are implicated in the production of inflammation mediating agent prostaglandin (PGE) from arachidonic acid [31],[32].

## CONCLUSION

Medicinal plant is the most exclusive source of life saving drugs for majority of the world's population. They continue to be an important therapeutic aid for alleviating the ailments of human kinds. *Argemone mexicana* is an important source of various types of compounds with diverse chemical structures as well as many pharmacological activities. Till date no more pharmacological work is done on this plant. The plant is in need to a greater research emphasis for better utilization of this plant for humankind. This review will be helpful in serve the purpose of aiding in future Research work on this plant.

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