



A REVIEW ON CHEMICAL CONSTITUENTS, MEDICINAL USES ANDS PHARMACOLOGICAL ACTIVITIES OF *ARGEMONE MEXICANA L.*

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Abstract:

Among the huge floral diversity many plants are considered wild or weed with no economical value, hence, somewhat neglected. *Argemone Mexicana L.* is one such widely growing weed in almost all the regions of India. *Argemone Mexicana L.* belongs to the family *papavaraceae*. The *papavaraceae* informally known as the poppy family, are an ethno pharmacologically important family of 44 genera and approximately 460 species of flowering plants. The present work offers a review addressing the detailed chemistry, pharmacology and medicinal uses of *Argemone Mexicana L.* regarded as one of the most significant plant species in traditional system of medicine. The plant is used in different parts of the world for the treatment of several ailments including tumors, warts, skin diseases, inflammation, rheumatism, jaundice, leprosy, microbial infections and malaria. The plant grows between 0.3 and 1.2 meters. A fatty acids and phyto compounds were identified which are utilized in antibacterial, antifungal, anti-inflammatory and antimycotic activities. The study concludes that *Argemone Mexicana L.* have many biological important compounds, so it can be recommended as a of the pharmaceutical product.

PLANT PROFILE:

Table 1: Plant Profile

Kingdom	Plantae
Phyllum	Angiosperms
Class-	Eudicots
Order	Ranunculales
Family	<i>Papaveraceae</i>
Genus	<i>Argemone</i>
Species	<i>A. Mexicana</i>

Keywords- Mexicana, Antidiabetic activity, traditional uses, phenolic, flavonoids phytocompound.

Introduction

Nature helps human beings to develop a healthy life and perform a great role to preserve our health [1]. India is recognized one of the oldest and eminent nation[2].plants are exclusive source of medicines and able to cure various chronic disease, these medicines are collect from plant extractive as a form of crude drugs[3]. Medicinal plants contain various important phytoconstituent that are used to manage of various human illnesses[4,5].

Ancient India is recognized as the "Emporium of medicinal plants" and medicinal plant are potentially reach sources of medicinal substances [6,7]. *Argemone Mexicana L* commonly known as prickly poppy in English and widely found in the United States and now a days widely distributed in many tropical and subtropical countries [8]. It occurs in almost every region of India [9]. The plant mostly grown in sandy, well drained, nutritionally poor and alkaline soils[10]. Flowers get height up to 4 to 5cm in diameter, yellow and scentless. Seeds are spherical, shining and black pitted[11]. Leaves height upto5 to 11 cm long with green and white, glaucous boardand Spiny[12]. It has lots of phytochemicals which is used for managing of various health problems, and this plant can be also easily accessible and it is economically feasible also[13]. *Argemone Mexicana L* shows positive response against the analgesic,narcotic, antispasmodic and sedative properties[14]. *Argemone Mexicana L* is used in India as traditional medicine in Ayurveda for jaundice, ophthalmia, scabies, cutaneous affections and dropsy[15,16,17]. Leaves and seeds extract are helps to maintain normal blood circulation and cholesterol level in human [18]. These plant parts possess anti-venom property as well [19,20]. Flowers are found to be expectorant and have been used in the treatment of cough. In Brazil, the plant is commonly known as 'cardo-santo' and used traditionally in the

treatment of a number of diseases. Seeds of the plant used as purgative, laxative and digestive while its latex is used against conjunctivities.

The chemical constituents isolated and identified from *Argemone Mexicana L.* Pharmacological activities exhibited by the isolated compounds as well as by the crude plant extracts were searched across the Medline (National library of medicine) and science direct databases. The data were updated, using the search terms *Argemone Mexicana L.* Chemical constituents, biological activities pharmacological activities or Ant diabetic activity as keywords. In addition, the reference list of all papers identified were reviewed.

Chemical constituents :-

Chemical constituents isolated so far from this plant are presented in table.2. Isolated compounds belongs to the class of alkaloids, besides, terpenoids, Flavonoids, phenolics, long chain aliphatic compound and few aromatic compound are found to be other constituents of this plant. Besides, its infusion finds application against hypertension in Brazil.

Table 2: Chemical constituent of *Argemone Mexicana L*

Plant part	Compound
Apigeal part	Isocrydine berberine (+)reticuline protopine allocryptopines (-)cheilanthifoline (-) Scoulerine
Arial parts	-(+) reticuline protomexicine 13-oxoprotopine (+) argenaxine (+) higenamine N-demethyloxysanguinarine pancorine
Seed	berberine porotopine sanguinarine dihydrochelerythine
Whole plants	dehydrocheilanthifoline dehydrocorydalmine Jatrorrhizine Columbamine Coptisine Captopine muxamine argemexicaine A argemexicaine B (+)chalanthifoline (-)stylopine nor-chelerythrine oxy hydrastinine thalifoline argemexmine dihydrocoptisine o-methylzanthoxyline nor-chelerythrine ornottianamide angoline

Medicinal Uses¹⁴

1. Leaves-

- ✓ Leaves along with black pepper are used to cure diabetes.
- ✓ Leaf decoction is used in the treatment of malaria, fever and ulcer.
- ✓ A decoction from the leaves is drunk to treat stomach aches and used in baths to treat muscular pain.
- ✓ The leaves are useful in coughs, wounds, ulcer, cold sores, skin disease.

2. Root-

- ✓ The root is used for treatment of chronic skin disease.
- ✓ Roots are used in skin disease.
- ✓ It is used as antibacterial cytotoxicity, wound healing, antioxidant and antifungal agent.
The roots are useful in all types of poisoning, malarial fever.
- ✓ A maceration of the root is used to treat vaginal discharge and hepato-biligeity problems.

3. Seed-

- ✓ The seed oil is purgative and used in the treatment of skin problems.
- ✓ The seeds have been used as an antidote to snake poisoning.
- ✓ The smoke of the seeds is used to relieve toothache
- ✓ The fresh yellow, milky seed extract contains protein dissolving substances effective in the treatment of diuretic, anti-inflammatory, malarial fever, leprosy, scorpion sting, and warts. Cold sores, skin disease itches Jaundice and antidote to various poisons.

4. Flowers–

- ✓ Flowers are found to be expectorant and have been used in the treatment of coughs

5. Juice latex-

- ✓ Juice of plant is applied on scorpion sting bite.
- ✓ latex is massaged on body to get relieve of rheumatic pain, thin liquid is applied on eye for eye infection.

6. Argemone Mexicana oil–

- ✓ The oil is useful in indolent ulcers, wounds, leprosy, Skin diseases, constipation, flatulence, colic and rheumatalgia.

Pharmacological activity of Argemone Mexicana L:-

Argemone Mexicana L. shows great pharmacological activity and it is being used from ancient time. Traditionally the extract from whole plant is beneficial for different types of pharmacological activities like Anti-Fertility activity, effect on ileum contraction in guinea pig, Antimalarial activity, Antifungal activity, cytotoxic activity, molluscicidal activity, Anti HIV Activity, Anti-inflammatory and analgesic activity used in chronic disease and leprosy inflammation anti oxidant. The aerial parts extract of the plant exhibit anti-parasite activity. methanol extract at a dosage of 200 mg/kg body weight was found analgesic, anxiolytic and sedative effects. In addition, acetone leaf extract of the plant showed significant anti-termitic activity, Antidiabetic activity, Anti-stress and ant allergic activity, vasoconstrictor and vasorelaxant effect, nematocidal activity, antifeedent activity, Lousicidal activity, Anticancer activity, antihepatotoxic activity and wound healing activity.¹⁴

Table 3: Bioactive compounds extract from different parts of *A. Mexicana L* with its pharmacological activity

Plant parts	Active Constituents	Pharmacological activity	Reference
Leaves	Berberine	Anti-fertility activity	11
		Effect on ileum contraction in guinea pig	
		Antimalarial activity	
Whole plant	Dehydrocorydalmine	Antifungal activity	11,13
Apigeal Parts, Aerial Parts	Protopine	Anti-fertility activity	13,14
		Effect on ileum in guinea pig Molluscicidal activity Antimalarial activity	
Apigeal Parts	Allocryptopine	Effect on ileum in guinea pig	14,11
Whole plant	Chelerythrine	Cytotoxic activity	13
Seed	Sanguinarine	Molluscicidal activity	11
Aerial part	(+)-Argenaxine (+)-Higenamine	Cytotoxic activity	14,11
		Cytotoxic activity	
Whole plant	Oxyberberine	Anti-fungal activity	11,13
Aerial part	N- Demethyloxysanguinarine	Cytotoxic activity	14
Aerial part	Pancorine	Cytotoxic activity	11
Whole plant	(+)-6-Acetyl Dihydrochelerythrine Angoline	Anti HIV activity	14,13
		Cytotoxic activity	
Leaves	B-Amyrin	Cytotoxic activity	11
	Cysteine	Anti-inflammatory & analgesic activity	
	Phenylalanine	Anti-inflammatory & analgesic activity	
	Isorhamnetin-3-O-B-D-	Anti-inflammatory & analgesic activity	
	Glucopyanoside	Anti-inflammatory & analgesic activity	
Roots	B-sitosterol	Used in chronic disease and leprosy Inflammation Antioxidant, Antifungal	
Seed	Dihydropalmatine Hydroxide	Anti-fertility activity	

Antidiabetic activity of *A. Mexicana*:-

Argemone Mexicana L plant aerial part was evaluated to test the hypoglycaemic activity of the plant. *Argemone Mexicana L* extract with dosage of 200mg/kg and 400mg/kg decreases blood glucose level in normal and experimentally induced diabetic rats. It also affected the increasing serum cholesterol, and triglycerides. This effect is directly proportional to the level of dose of *Argemone Mexicana*. Higher the dose more is the hypoglycaemic effect.

In Alloxan induced diabetic rats with the addition of ethanolic and aqueous extract at a dose level of 400 mg/kg, there is a decrease in the blood sugar level in significant manner. A similar kind of effect is also found with the addition of chloroform and hydroalcoholic and alkaloidal extract of *Argemone Mexicana* displayed the highest inhibitory activity of aldose reductase.

CONCLUSION

The present article deals with an up to date review on the chemistry, pharmacology, medicinal uses and Antidiabetic activity of *Argemone Mexicana L*.

There is a popular saying "there are two sides to which to every coin which means there is both advantages and disadvantages to each and every thing. similarly, *Argemone Mexicana L* being a weed, which is used as an adulterant in cooking oil and has numerous side effects, also has many physiological and chemical aspect along with Antidiabetic properties about which we made a review paper here.

Studies show that aerial parts of *Argemone Mexicana L* are used for its anti diabetic property, the level of dose of *Argemone Mexicana L* is directly proportional to the antidiabetic property of the plant.

So it's us who have to decide plant whether to use the plant for its beneficial purpose or to misuse it.

Furthermore studies should be, done for the in depth knowledge and understanding about its physiological and other beneficial health aspect so that one day it can be used mainstream medicine.

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