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A REVIEW ON ARGEMONE MAXECANA LINN- A MEDICINAL PLANT

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Abstract:
Argemone Mexicana is used as traditional medicine for the treatment of number of diseases including Tumors, Warts, Skin disease, inflammations, Rheumatism, jaundice, leprosy, microbial infection, constipation, chronic fever, HIV, and malaria. The seed oil is used as purgative and as pomade. Both of the seed oil and leaf infusions are drunk to relieve cough. Different parts of plants were extensively used in Ayurveda, siddha, unani and homeopathic medicines. The present work offers a review addressing the detailed plant chemistry, Traditional use phytochemical and pharmacological Properties of Argemone Mexicana.

Keyword: Plant profile, Phytochemistry, biological activity.
Argimona Mexicana is a speasies of poppy found in mexico and now widely naturalized in many parts of the world

Fig.1. Argemone Mexicana

Scientific Classification

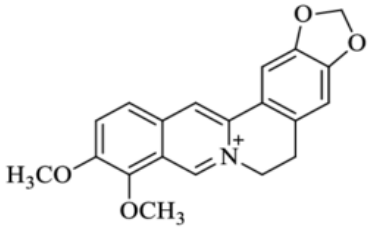
Kingdom: plantae
Clade: Tracheophytes
Family: papaveraceae
Genus: Argemone
Species: A.mexicana
Comman Name: Darudi, Prickly poppy, Mexican poppy
Habit: Annual, Prickly hearb with yellow latex and branch tap root.
Steam: Erect, branched, Woody at the base solid, cylindrical, Spinous, contains yellow latex
Leaves: Ramal and cauline, exstipulate,alternative,simple,subsessile,margin lobed and spinous,apex,acute, unicostate, reticulate venation, both the surfaces are covered with many spines.
Inflorescence: Solitory terminal.
Flower: embraceteate, pedicellate, complete, actinomorphic, hermaphrodite, tri-or hetermerous, hypogynous, yellow in colour
Fruit:
Fruit is a prickly oblong or egg-shaped (ovoid) capsule. Seeds are very numerous, nearly spherical, covered in a fine network of veins, brownish black and about 1 m m in diamete

Origin and Distribution

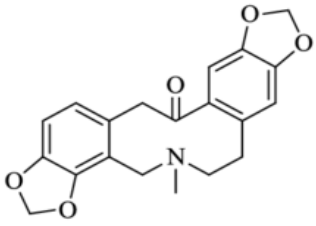
Argemone mexicana is native in Mexico and the West Indies, but has become pantropical after accidental introduction or introduction as an ornamental. It is naturalized in most African countries, from Cape Verde east to Somalia, and south to South Africa (Bosch, 2008). Distribution: Africa, Northeast Tropical Africa, Ethiopia, Socotra Asia-Temperate, Arabian Peninsula, North Yemen, Oman, Saudi Arabia, South Yemen Europe, Middle Europe, Austria, Germany, Switzerland , Southeastern Europe, Bulgaria , Southwestern Europe, France, Portugal, Spain Southern America, Brazil, Piaui , Northern South America, Venezuela , Southern South America, Paraguay , Western South America, Bolivia, Colombia, Ecuador.

Plant Part Used Whole plant: Seeds; Seed oil; Flowers; Latex; Roots; Leaves

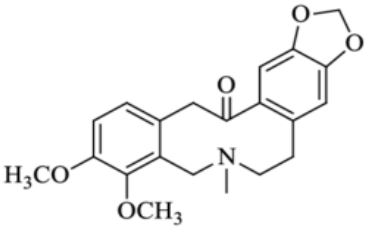
Chemical constituents:



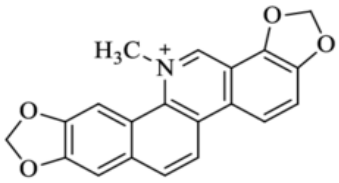
Berberine



Protopine



Allocryptopine



Sanguinarine

An Argemone Mexicana seed contains 22-36% of a pale yellow non edible oil called argemone oil or katkar oil which contains toxic alkaloids sanguinarine and dihydrosanguinarine. Four quarternary isoquinoline alkaloids, dehydrocorydalmine, jatrorrhizine,columbamine and oxyberberine, have been isolated from the whole plant of argimone Mexicana many other alkaloids such as argemexicaines A and B, coptisine, cryptopine, allocryptopine, and chelerythrine have also been found in this plant.[1,2]

Material and method for identification

Test for steroids:

Two ml of acetic anhydride was added to 0.5 g ethanolic extract of each sample with 2 ml H_2S0_4. The colour changed from violet to blue or green in some samples indicating the presence of steroids.

Test for terpenoids (Salkowski test):

Five ml of each extract was mixed in 2 ml of chloroform, and concentrated H_2S0_4 (3 ml) was carefully added to form a layer. A reddish brown colouration of the inter face was formed to show positive results for the presence of terpenoids.

Test for cardiac glycosides (Keller-Killani Test):

Five ml of each extracts was treated with 2 ml of glacial acetic acid containing one drop of ferric chloride solution. This was under layered with 1 ml of concentrated sulphuric acid. A brown ring of the interface indicates a de oxy sugar characteristic of cardenolides. A violet ring may appear below the brown
ring, while in the acetic acid layer, a greenish ring may form just gradually throughout thin layer.

Test for alkaloids

Mayer's test (Evans, 1997): To a few ml
Of the filtrates, a drop of Mayer's reagent

Mayer' test: The acidic test solution with Mayer's reagent (Potassium Mercuric iodide) gave cream colored precipitate.

Wagner's test: The acidic test solution treated with Wagner's reagent (Iodine in potassium iodide) gave brown precipitate.

Test for Amino acid

Millon's test: To the test solution add about 2 ml of millon"s reagent white precipitate indicates presence of amino acid.

Ninhydrine test: To the test solution add Ninhydrine solution, boil, violet colour indicates presence of amino acid

Test for Glycosides

Preparation of test solution: The test solution was prepared by dissolving extract in the alcohol or hydro- alcoholic solution.

Test for Proteins

Preparation of test solution: the test solution was prepared by dissolving the extract in water.

Millon's test: Test solution was treated with millon"s reagent and heated on a water bath. The proteins were stained red

Test for Triterpenoids

Preparation of test extract solution: The test extract solution was prepared by dissolving extract in the chloroform.

Salkowski test: Few drops of concentrated sulphuric acid were added to the test solution, shaken and on standing lower layer turned golden yellow.

Test for Flavonoids:

Shinoda test: Test solution with few fragments of magnesium ribbon and conc. HCL showed pink to magenta red colour. To a small quantity of test solution when lead acetate solution was added, it formed yellow colored precipitate.

Leucoanthocyanidins identification Test: 50 g of dry Ricinus communis material was weighed for a later addition of 100 mL of ethanol. Subsequently, the mixture was filtered and added 50 drops of concentrated hydrochloric acid for a later water bath.

Economic Value

Argemone mexicana has shown antibiotic activity against *Staphylococcus aureus*, *S. agalectiaei* and *Escherichia coli*, with potential in the pharmaceutical industry. It has been cultivated for its seed oil, which is used for soap production and for fuel.

Social Benefit

A. mexicana is used for religious purposes in Central America Extracts of the leaves, flowers and seeds of *A. mexicana* have been tested, mostly under laboratory conditions in India, against insect pests crop pathogens) and nematodes. Aqueous extracts have been tested with success against Tropical Hen Louse, *Lipeurus lawrensis tropicalis* (Kumar et al. 2002). Studies suggest that the extracts from the roots can be used to prevent oviposition and act as ovicidal against *Aedes* aegypti (Warikoo and Kumar, 2014). Von Weizsäckerl (1995) reported that it is used in parts of India to prepare antifeedant sprays in the same way as is done with leaves of *Azadirachta indica*. Extracts of *A. mexicana* readily kill the snail *Biomphalaria glabrata* and thus have potential as a molluscide for the relatively cheap control of human schistosomiasis (Melendez and Capriles, 2002). Although control or suppression of these pests has been found, there is little evidence for the widespread practical exploitation of these findings.

Medicinal properties have been attributed to the sap and oil from the seed (Holm et al., 1977). In the Guianas the whole plant is used as an infusion against asthma. The root is taken in rum and cognac for stomach pain. Sap from the cut end of the stem is applied to cavities as a treatment for toothache. Children having difficulty with urination are given infusions of petals (DeFilipps et al., 2004). In India (Madhya Pradesh) it is reported to be a homeopathic drug (Oudhia et al., 1998). In West Africa it is used as a cosmetics In East Africa, the seeds are ground and put into beer or tea to increase their potency and cause drunkenness (Verdcourt and Trump, 1969). In India, *A. mexicana* seeds are added to mustard oil in very small quantities, to increase its pungency.

Environmental services

Although the species has been reported as poisonous to animals, lemurs were seen eating the stems of the plants when other resources were scarce after a devastating cyclone in Madagascar (LaFleur and Gould, 2009). No detrimental health issues on the lemurs were reported by the authors.

Medicinal value

Medicinal possessions have been recognized to the seed sap and its oil (Holm et al., 1977). Ethnobotanically the entire plant is used as a blend to cure asthma. The root is mixed with alcohol (rum) to cure stomach pain. The sap of the stem (cut ends) is useful for the cure for toothache. Kids having obscure urination are given mixtures of petals (DeFilipps et al., 2004). In Madhya Pradesh (India) it is designated as a homeopathic preparation (Oudhia et al., 1998). In African nations, leaves of the plant are used as a cosmetic (Rukangira, 2001). The seeds are ground and mixed with beer/tea to augment their strength (Verdcourt and Trump, 1969). In India, the minute quantity of seeds of this plant is mixed with mustard oil to increase its pungency, however, above that minute quantity the mixing of its seeds to mustard is considered as an adulteration.

Ethnobotanical uses

Among many tribes this plant has certain ritual uses which are evident by their folklores (Hanelt and IPK, 2016). The different parts of this weed posses strong emetic, sedative actions and conventionally been used to take care of syphilis and various skin-diseases (Krishnamurthy, 1969; Savithramma et al., 2007). In cough and asthma seeds are given as a remedy. Seeds are also found laxative in nature with emetic, expectorant and demulcent properties. The root is an anti-helmintic (Nadkarni, 1982). Chemical characterization of this plant has discovered the existence of certain alkaloids, amino acids, phenolics and fatty acids (Hussain et al., 1983; Harborne and Williams, 1983). The plant contains several alkaloids, viz., protopine, berberine, sarguinarine, optisine, chelerytherine etc. While, the seed oil has fatty acids, viz., palmitic, myristic, oleic, linoleic acids, etc. The sap of the plant is yellow and contains minute quantities of berberine, also potassium nitrate was identified among the salts naturally existing in the plant

Uses:

Argemone Mexicana is used for skin infection, Wound healing, seed is use as mosquito repellent, For cough and bronchial asthma, for eye disorder, Purgative, for gonorrhea, urinary disorder, boils, ulcers warts ,Ringwarm infection.it also use as Anti HIV, Anti-inflammatory, anti stress, vasoconstriction, cytotoxic activity. Use as antihelmentics, and larvicidal

Argemone Mexicana Side Effects:

Internal consumption of Argemone Mexicana in large doses will lead to severe headache, burning sensation in the eye, eruption in face, nausea; fever etc. argemone oil should not be consumed if consumed in certain dosage it will lead to vomiting, diarrhea and in large doses will lead to acute toxicity. Animals generally don't eat this plant if they do it causes diarrhea and sleepiness.

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