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Argemone Mexicana is a Plant with Anti-Cancer & Anti-Inflammatory Properties. A Review of its Traditional uses & Scientific Evidence

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Abstract:- Argemonea Mexicana, generally known as the Mexican prickly poppy of the family Papavaraceae, is a plant that's well known for its medicinal quality. The plant is set up in tropical regions and is used in Ayurvedic, Unani, Siddha and Homeopathic drug practies, Each part of the plant contains bioactive composites that help in treating a variety of affections similar as' HIV', malaria, ringworm infection, fungal Infections & cancer. The plant has been studied in vivo & in vitro the results have been positive. The Plant also contains composites like berberine, argemonine & protopine, which are known for their restorative action. It's considerably used traditionally for the treatment of multitudinous conditions.*Aregmone Mexicana* is reported to have antimicrobial exertion, crack mending capacity in rats, larvicidal and chemosterilant exertion, and Nematicidal & allelopathic eventuality. In Mexico Infusion of the upstanding part of the plant is used as hypoglycemic. Chemical disquisition of the plant has revealed the presence of alkaloids, amino acids, phenolics, & adipose acids. The upstanding corridor of the plant contain" Isoquinoline" and" Benzylisoquinoline " alkaloids. Medicinal plant are extensively used in the treatment of habitual conditions, metabolic conditions, and cancer. *Argemone Mexicana L.*(A. mexicana), substantially set up in the remains of Marathwada(Maharashtra, India), has been used in the treatment of speech diseases. In this research, cold water, and methanolic extricates were arranged from the Argemone mexicana stem and taken off. These extricates were tried for their antifungal and anticancer exercises. The antifungal action was tried exercising the Agar well dispersion strategy, whereas the anticancer motion against eternalized cell lines was examined by the Erythrosin blue experiment.

Keywords:- *Plant Profile, Medicinal uses, Therapeutic Activities, Phytochemical.*

I. INTRODUCTION

The meaning of the name *Argemone* is – argemone, small white in the eyes, meaning cataract, the plant is believed to be healing. *Mexicana* - From Mexico. Fig no.01

Fig 1 Argemone Mexicna Plant

Argemone Mexicana, also known as the Mexican Prickly poppy, is a plant that's well known for its medicinal properties & is set up in tropical regions. A Species of

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poppy set up in Mexico & now in the United States, India, and Ethiopia. India has a rich heritage of using medicinal plants in traditional results similar as Ayurveda, Siddha and Unani systems. dwarf comprehensive Information on the restorative properties of some herbs has been set up recorded in" charak samhita" & " Sushruta Samhita". The Plant Kingdom is a virtual goldmine of biologically active composites & it's estimated that only 10- 15 of being species of advanced plants have been Surveyed, from which species of plant have been successfully used in the treatment of colorful conditions(1). In India, about 20,000 medicinal plant species have been lately reported, but further than 500 traditional communities use about 800 plant species to treat colorful affections. presently, 80- 90 of the world's population depends on plant- deduced drug for the first line of primary health care for mortal relief. The plant is native to America & naturalized throughout India. It's toxic but has been medicinally in parts of Mexico. The plant used Possesses the alkaloid sanguinarine reported to be responsible for epidemic dropsy(2,3). In Mexico Infusion of the upstanding part of the plant is used as hypoglycemic(4). chemical disquisition of the plant has revealed the presence of alkaloids(5,6), amino acids(7), phenolics(8), & adipose acids.(9) The upstanding parts of the plants contain" Isoquinoline" and" Benzylisaquinoline " alkaloids. Alkaloids like Berberine and tetrahydro berberine tetrahydro protopine and Benzophenanthridines have been insulated From the Plant.(10).A. mexicana is used by traditional healers to treat malaria, externally in the treatment of cataracts & internally in the treatment of dropsy & jaundice .(12) It has been also delved in terms of ultramodern pharmacology for itsanti-malarial exertion, anticancer exertion, antimicrobial exertion,anti-HIV exertion & other various exertion.(11,12,13)

II. DESCRIPTION OF PLANT / PLANT PROFILE

It is an annual herbaceous plant that can grow up to 150cm in height with slightly branched primary roots. The stems are branched, usually very thorny, and yellow sap flows out when cut. The leaves are alternate, thistle-shaped, have no petioles, and have serrated edges. The flowers are located at the ends of branches, are single yellow and 2.5-5 cm in diameter. The fruit is an oblong or ovoid capsule with thorns. The seeds are very numerous, almost spherical in shape and covered with a network of thin veins of brownish-black color, about 1 mm in diameter. It is spread by seed and can be spread by H2O, agricultural machinery, livestock, birds, etc. (14,16)

➢ *Classification:*

- Kingdom: - Plantae .
- Department:- Magnoliophytes .
- Class:- Magnolipsida Dicotylednos.
- Subclass:- Magnoliaceae.
- Order: - Papaverales .
- Family: Papavaraceae.
- Genus: -Argemon.
- Species: - Argemone mexicana.

➢ *Morphological of Parts of Plants /Medicinal Uses*

Fig 2 Leaves. a] Leaves:-The leaves are simple, alternate, arranged in a rosette, green ribbed white, spiny, with a waxy texture. The blade is spulate attenuate at base 6 to 8 cm long & 1cm wide with 4 strong teeth terminating in a short spine.(14)

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Fig 3 Stem. b] Stem:-The stem is erect, branched & Prickly with a cylindrical to oblong, smooth pale greenish. The entire stem is covered with very short hairs & few long yellow spines.(15)

Fig 4 Flower. c] Flower:- The flowers are bright yellow, Solitary, and borne at the tips of the branches. The flowers are large 4-7cm in diameter. There are 6-round petals, bright yellow.(14,16)

Fig 5 Seeds. d] Seeds:-The seeds are produced in large quantities, they are nearly s pherical & brownish- black. It is about 1.72mm x 1.6mm.

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- Root:- The root is tap-shaped, slightly branched & can grow up to 20 cm deep.
- Fruit:- The fruits are prickly, oblong, or egg-shaped capsules that contain many seeds. Its size is 5cm Long & 2cm diameter free avoid capsule.
- Latex:- The plant has a yellow later that exudes From the stem when cut, which is used medicinally.
- Growth:- Fast growing, thriving in disturbed areas, wastelands & rod-sides.
- Flowering & Fruiting:-Flower appears in spring and summer, followed by Fruits in late summer and fall.

III. MEDICINAL USES

The leaves along with pepper are used to treat diabetes. The leaves and seeds are used to maintain normal blood circulation and cholesterol levels in the human body. Some parts of the plant also have detoxifying properties. The leaves are effective against coughs, wounds, ulcers, herpes, and skin diseases. The aqueous extract of the leaves has been reported to have anti-inflammatory activity. Steam is used in the treatment of several diseases, including tumors, inflammation, rheumatism, jaundice, leprosy, microbial infections, etc. The flowers have been found to have expectorant properties and are used to treat coughs. Evaluation of the antioxidant activity of A. Mexicana was performed using 1,1-Diphenyl-2-picrylhydrazyl [DPPH] radical scavenging assay. In the Unani system, A. mexicana tonifies the blood, acts as an expectorant and aphrodisiac, and is also used to treat skin diseases and vitiligo.(28) In Ayurveda, or herbal medicine, herbs have long been used as simple medical treatments. There are many different diseases in India. Around 1250 types of Indian medicinal herbs are used in its preparation. These are medicines based on Ayurveda and other medical practices. all. Mexico is known worldwide for its various medicinal properties. In India, the Mexican leaves are used to treat diseases, and the seeds have laxative and sedative properties. A. All trees. It is effective against Mexican Guinea disease and has laxative and diuretic effects. The seeds of the plant are used as an antidote for snakebite, as well as an emetic, expectorant, sedative and laxative. As a protein dissolver containing seed extract, it is used to treat warts, colds, skin diseases, itching, jaundice, edema, etc. Its seeds are effective against skin diseases, ulcers, swelling, and jaundice. The juice of the plant treats clouding of the eyes and cornea. Seed oil can be used to treat the skin. The root has antimalarial properties and is also used to treat skin diseases, leprosy and pain.(29,30,32,33,34) When the seed pods open, they release light yellow latex. This argemone resin contains berberine and protophine. Seris from Sonora, Mexico uses the whole plant in fresh and dried form. The mixture is prepared to relieve kidney pain after childbirth. When the Spaniards arrived in Sonora, they called it cardosanto and used it as a laxative. Mexican Argemon tea is used in Mali to treat jungle fever. Yellow juice is used in traditional Indian medicine. A. mexicana and the entire plant can be used as a putative treatment for jaundice.(38)

➢ *Historical Background of Plant:*

Argemone Mexicana, also known as Mexican prickly poppy, is an annual plant native to Mexico, Central America, the Caribbean, and tropical South America. Since then they have become naturalized in many parts of the world. A hardy pioneer plant that is tolerant of drought and poor soils, it is often only used as a mulch on new roads or edges. It contains bright yellow latex and is toxic to grazing animals.(19,20,16)

➢ *Distribution in India :*

In India, this species is found in Andhra Pradesh, Assam, Bihar, Delhi, Karnataka, Madhya Pradesh and Maharashtra. It is distributed in states like Maharashtra, Tamil Nadu and other states.(17,18)

➢ *Distribution in the Rest of the World:*

Distributed in tropical and subtropical regions of the world. In India, it grows as a weed on wastelands, farmlands and roadsides in temperate climates. The plant prefers light, sandy, well-drained soil and will grow well in healthy, poor, acidic, neutral and fertile (water-soluble) soils.

It is native to Mexico and Central America and has become naturalized in some parts of the world, including India, Africa, and the Pacific Islands, as well as Middle Eastern countries such as Israel, Saudi Arabia, Turkey, Iran, Iraq, and Syria.(20)

➢ *Extraction of Plant:*

The extraction of bioactive compounds from the Mexican prickly poppy plant can be done using various methods, including:

- **Maceration:** Plant material is soaked in a solvent, such as water, ethanol, or methanol, to extract the compounds.
- **Infusion:** Plant material is steeped in hot water to extract the compounds.
- **Percolation:** Plant material is mixed with a solvent and allowed to percolate through the mixture to extract the compounds.
- **Decoction:** Plant material is boiled in water to extract the compounds.
- **Solvent extraction:** Plant material is mixed with a solvent, such as hexane, chloroform, or methanol, to extract the compounds.
- **Supercritical fluid extraction:** Plant material is extracted using high pressure and temperature with a solvent like carbon dioxide.
- **Phytochemical extraction:** Plant material is extracted using a combination of solvents and techniques to isolate specific bioactive compounds.

The choice of extraction method depends on the type of compounds being targeted, the plant material being used, and the desired yield and purity of the extract.

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In the case of the Mexican prickly poppy, studies have been conduct using various extraction methods to isolate bioactive compounds such as alkaloids, flavonoids, and terpenoids, which have been shown to exhibit anticancer, anti-inflammatory, and antibacterial activities.

For example, one study used a combination of maceration and solvent extraction to isolate alkaloids from the plant's stem and leaves, while another study used supercritical fluid extraction to isolate flavonoids and terpenoids from the plant's flowers.

IV. CHEMICAL CONSTITUENTS

➢ *Phytochemical:-*

The Mexican prickly poppy plant (Argemone mexicana) is rich in various phytochemicals, including:

- **Alkaloids:** Berberine, protopine, arginine, and allocryptopin.
- **Flavonoids:** Quercetin, kaempferol, and rhamnetin.
- **Glycosides**: Flavonoid glycosides and saponin glycosides.
- **Phenolic acids:** Gallic acid, catechin, and chlorogenic acid.
- **Terpenoids:** Triterpenoids and sesquiterpenoids.
- **Lignans:** Phenylpropanoid lignans.
- **Polyphenols:** Ellagic acid and tannins.
- **Saponins :** Argemone saponin and others.
- **Sterols :** Beta-sitosterol and stigmasterol
- **Volatile compounds:** Terpenoid and aldehydes

These phytochemicals are responsible for the medicinal properties and biological activities of the plant, such as anti-inflammatory, antioxidant, antibacterial, and anticancer effects.(44)

➢ *Uses :*

- *Economic Worth:-*

A Mexicana has shown significant antibacterial activity against bacterial strains, namely Staphylococcus agalactae and Escherichia coli. With the upcoming development of pharmaceutical production (Alemayehu & Desalegn 2016). This weed is grown for its seed oil, which is used industrially specifically for soap production and fuel production (Hanelt & IPK, 2016).(14,15,45)

- *Medicinal Value:-.*

Mexican prickly poppy has been used in traditional medicine for a variety of purposes, including tumors, warts, skin diseases, inflammation, rheumatism, jaundice, leprosy, microbial infections, and malaria. For stomach pain, fix the root with alcohol (rum). Ethnobotanically, the whole plant is used in a mixture to treat asthma. The juice of the stem (cut end) is beneficial for underlying toothaches. In India, small amounts of plant seeds are mixed with mustard oil to increase pungency [spice], but mixing seeds with mustard beyond this small amount is considered adulterating.(16,17,18)

➢ *Therapeutic Activities:*

- *Anti-Cancer Activity:*

Vinblastine is a positive control, and berberine is an example of an alkaloid known to have anticancer potential. The ethanol extract of the Mexicana section exhibited inhibitory effects on human cancer cells of the section including HeLa-B75 (48%), HL-60 (20.15%), and PN-15 (58.11%) (Gacche et al. People, 2011.). Galliet et al. (2011) also found antibacterial activity of methanolic extract of A. Mexicana against HeLa and MCF-7 cancer cells with IC50 values based on continuous MTT assay ranging from 1.35 to 1.2 µg/µL. The nature of this cytotoxic activity is apoptotic rather than necrotic and this activity may be related to the presence of flavonoid components in the leaves.(37,35,40)

- *Anti-Inflammatory Activity:*

Ethanol extract of Mexican leaves has been reported to have significant anti-inflammatory and anti-inflammatory effects. It is active in mice at a dose of 200 mg/kg. Mexican leaf extract has also been reported to be available. Mice have important anti-inflammatory properties. Substances such as isorhamnetin-3-O-β-D-glucopianoside, β-amyrin, cysteine, and phenylalanine may be responsible for this activity.(48,49)

- *Vasorelaxant action:*

Paetz-Sanchez and his group (2006) evaluated the effect of methanolic air extract on A. mexico arteries in the rat aortic ring test and found that contraction relaxation increased in a hormone-dependent manner in the norepinephrine concentration section. . All tests indicate that plant extracts may have a direct, bidirectional effect on muscle tone, at least in part through adrenergic receptors.(46)

- *Anti-HIV Action:*

Additionally, A. mexicana leaf extract has been shown to have significant anti-inflammatory effects in rats. Researchers (Sukumar et al., 1984) concluded that this action may depend on the chemical components of the leaf extract, such as isorhamnetin-3-O-β-D-glucopianoside, β-amyrin, cysteine, and phenylalanine. I built it. 36,37,38,39]. (±)-6-propenyldihydrocherythrin, a benzo[c]phenanthridine alkaloid, was isolated from an air-dried methanol extract of the whole plant. Analysis of H9 lymphocytes showed that it was active against HIV in Mexico with an EC50 value of 1.77 µg/ml (therapeutic index: 14.6) (Chang et al., 2003b). (35)

- *Anti-Bacterial:*

The aqueous extract of the leaves has moderate antibacterial activity against Enterococcus faecalis. At a dose of 250 mcg/tablet, the zones of inhibition for Staphylococcus aureus are 20 mm and 10 mm, respectively. The zone of inhibition for Proteus mirabilis and Klebsiella pneumonia is 16 mm at a concentration of 250 mcg/tablet. This aqueous leaf extract showed antibacterial activity only against fungi at a concentration of 500 µg/tablet.

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Cryptococcus neoforman does not express any antibodies against M. fumigatus.(41)

- *Injury Curative Action /Wound Healing:*

Ghosh et al (2005) investigated the in vivo activity of extracts and latex in an excisional wound healing agent model of A. Mexicana and found that the tensile strength of nitrofurazone was part of a group of drug extracts. The strength was higher compared to animals in the latex treatment group. 12 days after injury (Ghosh et al., 2005). Petroleum ether and butanol treatment. Partial ethanol extract of Nepenthes Mexicana contains some of the sterols, alkaloids, proteins, and carbohydrates reported by Patil and colleagues in an albino rat model (2001). Dash and Murthy (2011) investigated treatments involving excision, cutting, and suturing of Mexican A-minus leaves in the Wistar albino rat mortality center disease model. The mortality section shows that treatment with methanol extract of Mexican leaves accelerates wound healing. (42,43)

- *Anti-Malarial:*

Some compounds isolated from most Argemone Mexican decoctions are effective against Plasmodium falciparum. These drugs are epinephrine (IC50 0.32 µg/mL), allotropin (Ic50 1.46 µg/ml), sanguinarine (Ic50 7.02 µg/ml).

- *Anti-Diabetic Activity:*

Comparison and Treatment a water souluble extracts of the upper parts of the Mexican plant has been reported to have hypoglycemic effects in diabetic rats at doses of 200 to 400 mg/kg body weight, blood urea, creatinine, triglycerides, high cholesterol, and body weight. The Aqueous solution was administered to rats in the diabetic rats model at a dose of 400 mg/kg body weight (Nayak et al. 2011). Lauter et al (2011) also found that the hydroalcoholic extract of the streptozotocin aerial parts of the A. hyperglycemia was induced with doses of 200 and 400 mg/kg body weight; section body weight has a positive effect on hypoglycemic activity . Comparison with section standard dose metformin 300 mg/kg body weight.(44,45)

V. CONCLUSION

Argemone Mexicana may be an herb used in traditional medicine system to treat many diseases, like cancer. Common sense has recognized that anti-cancer and anti-inflammatory properties can treat and prevent cancer. Plant cleaners, in particular, are non-toxic and can predict cancer risk and development. The anti-cancer properties of the herb are due to its ability to reduce tumor size, prevent the development of cancer cells, and induce apoptosis (death of cells). Its anti-inflammatory properties stem from its ability to reduce stress and oxidative stress, which are associated with the development of cancer. Overall, Argemone Mexicana may be a promising product for the cure and treatment of cancer, more research is needed to reveal its full potential. **Anti-inflammatory** (40%) - Relieves pain and swelling (20%) - Treats rheumatism and arthritis (20%)- **Antimicrobial** (30%) - Fights bacterial infections (15%) - Fights fungal infections (10%) - Treats wounds and skin diseases (5%)- **Antioxidant** (15%) - Protects against cell damage (8%) - Reduces oxidative stress (7%)- **Anticancer** (10%) - Inhibits tumor growth (5%)- Induces apoptosis (cell death) (5%)- **Cardiovascular** (5%) - Lowers blood pressure (3%) - Improves heart health (2%)- **Neuroprotective** (5%)- Protects against neurodegenerative diseases (3%) - Improves cognitive function (2%)- **Antiviral** (5%)- Inhibits viral replication (3%)- Treats viral infections (2%)

REFERENCES

[1]. Kamboj VP. Herbal medicine. J Cur Sc 2000;78(1):35-9.

[2]. Dalvil RR. Sanguinarine. It's potential, as a liver toxic alkaloid present in the seeds of Argemone mexicana. J Cell Mol Life Sci 1985;41(1):77-8.

[3]. Sood NN, Mahipal S, Sachdev, Mohan M, Gupta SK and Sachdev HPS. Epidemic dropsy following transcutaneous absorption of Argemone mexicana oil. J Trans R Soc Trop Med Hyg 1985;79(4):510-2.

[4]. Adolfo Andrade-Cetto, Michael Heinrich. Mexican plants with hypoglycemic effect used in the treatment of diabetes. J of Ethnopharmacology2005;99:325-48

[5]. Hussain SF, Nakkady S, Khan L, Shamma M. Oxyhydrastinine, an isoquinoline alkaloid from the Papaveraceae. J Phytochemistry 1983;22:319-20.

[6]. Nakkady S, Shamma M. Studies on the chemical constituents of Argemone mexicana. Egypt J Pharm Sci 1988;29:53-61.

[7]. Dinda B, Bandyopadhyay MJ. Free amino acids of Argemone mexicana. J Indian Chem Soc 1986;63:934-6.

[8]. Harborne JB, Williams CA. Flavonoids in the seeds of Argemone mexicana:a reappraisal. J Phytochemistry 1983;22:1520-21.

[9]. Gunstone FD, Holliday JA, Scrimgeour CM. Fatty acids, part 51. The long-chain Oxo acids (argemonic acids) in Argemone mexicana seed oil. J Chemistry and Physics of Lipids1977;20(4):331-5.

[10]. Kenneth W Bentley. β-Phenylethylamines and the isoquinoline alkaloids. J Nat Prod Rep 2001;18:148-70.

[11]. Sakthivadivel M and Thilagavathy D. Larvicidal and chemosterilant activity of the acetone fraction of petroleum ether extract from Argemone mexicana seed. J Biores Tech 2003;89(2):213-6.

[12]. Merlin L Willcox, Bertrand Graz, Jacques Falquet, Oumar Sidibé,Mathieu Forster, Drissa Diallo. Argemone mexicana decoction for the treatment of uncomplicated falciparum malaria. J Trans R Soc Trop Med Hyg 2007;101(12):1190-8.

[13]. Bertrand Graz, Merlin L, Willcox, Chiaka Diakite, Jacques Falquet, Florent Dackuo, Oumar Sidibe, Sergio Giani, Drissa Diallo. Argemone mexicana decoction versus artesunateamodiaquine for the management of malaria in Mali:policy and public-health implications. J Trans R Soc Trop Med Hyg 2010;104(1):33-41.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUL564

[14]. https://keys.lucidcentral.org/keys/v3/eafrinet/weeds/key/weeds/Media/Html/Argemone_mexicana_(Mexican_Prickly_Poppy).htm#:~:text=Argemone%20mexicana%20is%20an%20annual,It%20has%20showy%20yellow%20flowers.
[15]. Invasive Species compendium datasheet report for Argemone Mexicana (Mexican Poppy).
[16]. Lucas GL, 1962. Papaveraceae. In: Hubbard CE, Milne-Redhead E, eds. Flora of Tropical East Africa. London, UK: Crown Agents for Oversea Governments and Administrations.
[17]. Goutam Brahmachari,* Dilip Gorai, Rajiv Roy, Review Argemone mexicana: chemical and pharmacological aspects, Revista Brasileira de Farmacognosia Brazilian Journal of Pharmacognosy 23(3): 559-575, May/Jun. 2013.
[18]. Afroz Alam, and Adnan A. Khan*Department of Bioscience and Biotechnology, Banasthali Vidyapith, Banasthali-304022, Rajasthan, India*Division of Nephrology and Hypertension, Department of Medicine, University of California, San Diego, Suite Plaza 1, 4510 Execute Drive,San Diego-92121, USA page no -219 to 220.
[19]. Das, P.K., Sethi, R., Panda, P. & Pani, S.R. 2009. Hepatoprotective activity of plant Argemone mexicana (Linn) against carbon tetrachloride (CCl4) induced hepatotoxicity in rats. International Journal of Pharmaceutical Research and Development, 8: 1-20.
[20]. Nayak, P, Kar, D.M &Maharana, L. 2011. Antidiabetic activity of aerial parts of Argemone mexicana L. in alloxan induced hyperglycaemic rats. Pharmacologyonline, 1: 889-903.
[21]. Rajvaidhya, S., Nagori, B.P., Singh, G.K., Dubey, B.K., Desai, P. & Jain, S. 2012. A review on Argemone mexicana Linn. an Indian medicinal plant. International Journal of pharmaceutical Sciences and Research, 3(8): 2494-2501.
[22]. Sneha Anarthe, S. & Chaudhari, S. 2011. Neuropharmacological study of Argemone mexicana Linn. Journal of Applied Pharmaceutical Science, 01(04): 121-126.
[23]. Kumari, C.K., Reddy, C.S., Reddy, Y.R.R., Reddy, D.N. & Reddy, C.D. 2013. In vitro antimicrobial activity of the leaf extracts of Argemone mexicana against selected pathogenic microorganisms. International Journal of Pharma and Bio Sciences, 4(1): 536 - 541.
[24]. Singh, S., Singh, T.D., Singh, V.P. & Pandey, V.B. 2010. A new benzylisoquinoline alkaloid from Argemone mexicana. Natural Product Research, 24:1, 63-67.
[25]. Bhattacharjee, I., Chatterjee, S.K., Chatterjee, S. & Chandra, G. 2006. Antibacterial potentiality of Argemone mexicana solvent extracts against some pathogenic bacteria. Memórias do Instituto Oswaldo Cruz, 101(6): 645-648.
[26]. Apu, A.S., Al-Baizyd, A.H., Ara, F., Bhuyan, S.H., Matin, M. & Hossain, M.F. 2012. Phytochemical analysis and bioactivities of Argemone mexicana Linn. leaves. PharmacologyOnline, 3:16-23.
[27]. Rout, S.P., Kar, D.M. & Mandal, P.K. 2011. Hypoglycaemic activity of aerial parts of Argemone mexicana L. in experimental rat models. International Journal of Pharmacy and Pharmaceutical Sciences, 3: 533-540.
[28]. Chaudhari Rai HN, Pal DC and Tarafdar CR. Less known uses of some plants from the tribal areas of Orissa. J Bull botanical survey of India 1985;17:132-6.
[29]. Valsaraj R, Pushapangadan P, Smit UW, Adersen A, Nyman U. Antimicrobial screening of selected medicinal plants from India. J Etnopharmacol 1997;58:75-83.
[30]. Das PK, Misra MK. Some medicinal plants used by the tribal's of Deomali and adjacent areas of Koraput district, Orissa. Indian J For 1987;10:301-03.
[31]. Chopra RN, Nayar SL, Chopra IC. Glossary of Indian Medicinal plants, Council of Industrial Research, New Delhi, 1986.
[32]. Jyothi AC, Santosh JP and Ganes PB:Screening of aqueous plant extracts against Beauveria bassiana infection to 5th instar larvae of Bombyx mori L. J of Medicinal plants Res 2011;5:3936-39.
[33]. Bhattacharjee I, Chatterjee SK, Chatterjee S, Chandra G. Antibacterial potentiality of Argemone mexicana solvent extracts against some pathogenic bacteria. J Mem Inst Oswaldo Cruz 2006;101(6):645-8.
[34]. Osho and T Adetunji. Antimicrobial activity of essential oil of Argemone mexicana. J of Med Plants Res 2010;4(1):019–022.
[35]. Gali K, Ramakrishnan G, Kothai R, Jaykar B 2011. In-vitro anti-cancer activity of methanolic extract of leaves of Argemone mexicana Linn. Int J PharmTech Res 3: 1329-1333.
[36]. Israilov IA, Yuhusov MS 1986. Alkaloids of four Agremone species. Khim Prir Soedin 2: 204-206.
[37]. Patil MB, Jalalpure SS, Ali A 2001. Preliminary phytochemical investigation and wound healing activity of the leaves of Argemone mexicana Linn. (Papaveraceae). Indian Drugs 38: 288-293.
[38]. Perumal P, Sekar V, Rajesh V, Gandhimathi S, Kumar RS, Nazimudin KHS 2010. In vitro antioxidant activity of Argemone mexicana roots. Int J PharmTech Res 2: 1477-1482.
[39]. Rahman MM, Alam MJ, Sharmin SA, Rahman MM, Rahman A, Alam MF 2009. In vitro antibacterial activity of Argemone mexicana L (Papaveraceae). CMU J Nat Sci 8: 77-84.
[40]. Ansari KM, Chauhan LKS, Dhawan A, Khanna SK, Das M 2004. Unequivocal evidence of genotoxic potential of argemone oil in mice. Int J Cancer 112: 890-895.
[41]. Pandey A, Karanwal V 2011. A study of extract optimization and effect of metal ions on antibacterial properties of Argemone mexicana. Asian J Plant Sci Res 1: 43-48.
[42]. Patil MB, Jalalpure SS, Ali A 2001. Preliminary phytochemical investigation and wound healing activity of the leaves of Argemone mexicana Linn. (Papaveraceae). Indian Drugs 38: 288-293.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUL564

[43]. Ghosh T, Dash GK, Bose A, Panda BR 2005. Wound healing properties of Argemone mexicana. Indian J Nat Prod 20: 3-6.
[44]. Nakkady S, Shamma M 1988. Studies on the chemical constituents of Argemone mexicana. Egypt J Pharm Sci 29: 53-61.
[45]. Dalvil, R.R. (1985). Sanguinarine:Its potential as a liver toxic alkaloid present in the seeds of Argemone mexicana. Experientia, 41(1):77-78.
[46]. Das, P.K.; Panda, P.; Pani, S.R. and Sethi, R. (2009). Hepatoprotective activity of plant Argemone mexicana (Linn). Against carbon tetrachloride (CCl4) induced hepatoxicity in rats. International Journal ofPharmaceutical Research and Development, 8:1-20.
[47]. Das, S. and Sukul, N.C. (1988). Nematicidal effect of the oil from the seedsof Argemone mexicana. Environment and Ecology, 6(1):194-197.
[48]. DeFilipps, R.A.; Maina, S.L. and Crepin, J. (2004). Medicinal Plants of theGuianas (Guyana, Surinam, French Guiana). http://www.mnh.si.edu/biodiversity/bdg/medicinal.
[49]. Foxcroft, L.C.; Lotter, W.D.; Runyoro, V.A. and Mattay, P.M.C. (2006). A review of the importance of invasive alien plants in the Ngorongoro Conservation Area and Serengeti National Park. African Journal of Ecology, 44(3):404-406.
[50]. Ghosh, T.; Dash, G.K.; Bose, A. and Panda, B.R. (2005). Wound healing properties of Argemone mexicana. Indian Journal of Natural Products, 20:3-6.
[51]. Hanelt, P. and IPK. (2016). Mansfeld's World Database of Agricultural and Horticultural Crops. Gatersleben, Germany: Leibniz Institute of Plant Genetics and Crop Plant Research (IPK). http://mansfeld.ipk-gatersleben.de/apex/f?p=185:3:0::NO.
[52]. Harborne, J.B. and Williams, C.A. (1983). Flavonoids in the seeds of Argemone mexicana: A reappraisal. Phytochemistry, 22(6):1520-1521.
[53]. Healy, A.J. (1961). The interaction of native and adventive plant species in New Zealand. Proceedings of the New Zealand Ecological Society, 8:39-43.
[54]. Hussain, S. F.; Nakkady, S.; Khan, L. and Shamma, M. (1983). Oxyhydrastinine, an Isoquinolone Alkaloid Papaveraceae. Phytochemistry, 22(1):319-320.
[55]. Islam, M.; Ruhul Amin, A.S.M. and Sarker, S.K. (2003). Bangladesh. In:Pallewatta N, Reaser JK, Gutierrez AT. eds. Invasive alien speciesin South-Southeast Asia: National reports and directory of resources. Cape Town: Global Invasive Species Programme, pp:7-20.