



Received on 07 March, 2012; received in revised form 17 April, 2012; accepted 22 June, 2012

## ETHANOBOTANICAL AND CURRENT ETHANOPHARMACOLOGICAL ASPECTS OF *ARGEMONE MEXICANA* LINN: AN OVERVIEW

Charles Lekhya Priya and Kokati Venkata Bhaskara Rao\*

Molecular and Microbiology Research Lab., Environmental Biotechnology Division, School of Bio Sciences and Technology, VIT University, Vellore-632 014, Tamil Nadu, India

### Keywords:

*Argemone mexicana*,  
Prickly poppy,  
Ethnobotany, P  
hytochemistry

### Correspondence to Author:

**Dr. Kokati Venkata Bhaskara Rao,**

Associate Professor, Molecular and  
Microbiology Research Laboratory,  
Environmental Biotechnology Division,  
School of Bio Sciences and Technology,  
VIT University, Vellore-632 014, Tamil  
Nadu, India

### ABSTRACT

*Argemone mexicana* is an indigenous herb commonly known as Prickly poppy. It belongs to the family Papaveraceae. *Argemone mexicana* is noted to possess medicinal benefits in traditional system of medicine. During last few decades, there has been increasing interest in the study of medicinal properties of this plant and it is reported for Antimicrobial, Antidiabetic, Antioxidant and Hepatoprotective activity. The plant was also reported for other activities like Larvicidal activity, Wound healing activity, Cancer activity, Anthelmintic activity and Neuropharmacological studies. In light of these medicinal properties, this plant can be represented as a valuable source of medicinal compound. This study depicts the overall information about the ethnobotany, phytochemistry and pharmacological activities of the *A. mexicana*.

**INTRODUCTION:** India is well-known for the use of medicinal plants as a folklore medicine from ancient times. At present many compounds have been isolated from plants for treating numerous diseases. Medicinal plant research has succeeded in overwhelming the problems associated with synthetic drugs in maintaining low toxicity and less side effects. In last few decades, many plants has been reported for ethno pharmacological properties viz., Antimicrobial activity<sup>1</sup>, Cytotoxic activity<sup>2</sup>, Antidiabetic activity<sup>3</sup>, Antiarthritic activity<sup>4</sup>, Antioxidant activity<sup>5,6</sup>, Anti-tuberculosis activity<sup>7</sup>, Antiulcer activity<sup>8</sup>, Wound healing activity<sup>9</sup>.

*Argemone mexicana* is an annual herb commonly known as Mexican prickly poppy belongs to the family Papavaraceae<sup>10</sup>. It is native of tropical America which has distributed in tropical and subtropical regions of the World<sup>11</sup>. In India, it grows in the temperate region

as a weed in waste lands, cultivating fields and road sides<sup>12</sup>. In the traditional system of medicine, whole plant of *A. mexicana* is extensively using in the treatment of tumors, warts, skin diseases, inflammations, rheumatism, jaundice, leprosy, piles, warm infestations and dysentery. Leaf decoction is used to cure malarial fever and ulcers. Seeds are efficient in treating leprosy, dropsy and jaundice. Juice of the plant is used as a remedy against Scorpion bite<sup>13</sup>. In recent years, many scientific investigations were carried out on different parts of this plant which gives a hope for the researchers to isolate many compounds of pharmacological interest.

The present study is to review the overall information on the taxonomical classification, morphology, distribution, traditional uses, phytochemical constituents and recent scientific investigations of *A. mexicana* plant.

**Taxonomy of *A. mexicana* plant:** *A. mexicana* belongs to the Kingdom: Plantae, Division: Magnoliophyta, Order: Papaverales, Family: Papaveraceae, Genus: *Argemone*, Species: *Argemone mexicana* L.

**Morphology of the plant:** It is an erect annual spiny herb with grayish white stem secreting yellow coloured latex. It grows to a height of 0.3 to 0.12m. Leaves are exstipulate, sessile, alternate, deeply lobed, cauline with unicostate reticulate venation with thorny margins. Fruit is thorny porcidal capsule having blackish brown seeds<sup>14</sup>. Flowers are large, complete, hypogynous, pedicillate, actinomorphic, hermaphrodite and ebracteate. Calyx has 3 sepals, polysepalous with twisted aestivation. Corolla is yellow in colour with 6 petals, polypetalous, deciduous and imbricate aestivation.

Stamens are polyandrous, indefinite with complete, introse and yellow anthers. Gynoecium has 4-6 carpels, syncarpous with unilocular superior ovary and parietal placentation<sup>15</sup>. Roots are long and subcylindrical. *Argemone mexicana* contains light yellow coloured fat oil which is obtained by pressurizing the seeds. Argemone oil is raw tasted and slightly has nauseous odour which can be easily saponified<sup>16</sup>. Morphology of the plant is shown in **Figure 1**.



**FIGURE 1: ARGEMONE MEXICANA LINN**

**Traditional uses:** *A. mexicana* is extensively used in traditional system of medicine in the treatment of numerous diseases. Various parts of the plant were extensively using in Ayurveda, Siddha, Unani and Homeopathic medicines.

**In Ayurveda:** The whole plant of *A. mexicana* is effective in guinea-worm infestations, purgative and diuretic. Seeds of the plant are used as an antidote in snake poisoning and also acts as an emetic, expectorant, demulcent and laxative. The protein-dissolving substances containing seed extract is used to cure warts, cold sores, cutaneous infections, itches, jaundice and dropsy<sup>17</sup>. Seeds are effective against skin infection, sores, dropsy and jaundice<sup>18</sup>. Juice of the plant cures ophthalmic and opacity of cornea. Oil of the seed is used to treat skin diseases. Roots are antihelminthic and also used in, skin diseases, leprosy and inflammations<sup>19</sup>.

**In siddha medicine:** This plant is widely used to cure venereal sores, photophobia, scorpion bite, leucorrhoea. Leaves along with black pepper are used to cure diabetes. The latex of *A. mexicana* used to treat boils by topical application on the site of boils. Whole plant is used to treat dental disorders<sup>20</sup>. Leaf decoction is used in the treatment of malarial fever and ulcers. Juice of the plant is applied on scorpion sting. Seeds are effective against leprosy, jaundice and dropsy<sup>13</sup>.

**In Unani medicine:** *A. mexicana* helps in the enrichment of blood which acts as an expectorant and aphrodisiac. It is also used in treating skin diseases and leucoderma<sup>21</sup>.

**In Homeopathic medicine:** The drug prepared from this plant is very effective in treating the problem caused by tape worm. The whole plant is reported to be used for the treatment of whooping cough and bronchitis<sup>22</sup>.

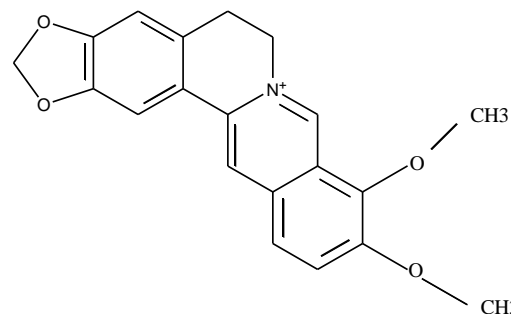
**Nomenclature of *A. mexicana* in different languages:** *A. mexicana* is distributed widely in India and known with different names in various languages. Some of the names are reported in **Table 1**.

**TABLE 1: NOMENCLATURE OF *A. MEXICANA* IN DIFFERENT LANGUAGES**<sup>11, 23</sup>

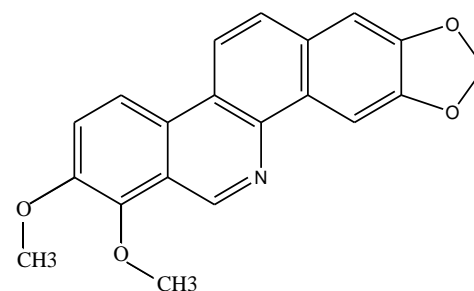
Name	Language
Mexican poppy	English
Brahmadandi/Hemavati/Hemadugdha	Sanskrit
Bharbhand/Biladhutura/Satyashashi	Hindi
Brahmadandi	Telugu
Brahmadandu, Kurukkum	Tamil
Brahmdanti	Malayalam
Darudi	Gujarathi
Daruri/ Firangidhotra/Kontedhotra	Marathi
Dhaturi	Rajasthani

**Phytochemical Constituents in *A. mexicana*:** *A. mexicana* is reported to possess alkaloids<sup>24, 25</sup>, amino acids<sup>26</sup>, phenolics<sup>27</sup> and fatty acids<sup>28</sup> as major phytochemical groups. A series of bioactive compounds have been reported and some of them are isolated from different parts of *A. mexicana*.

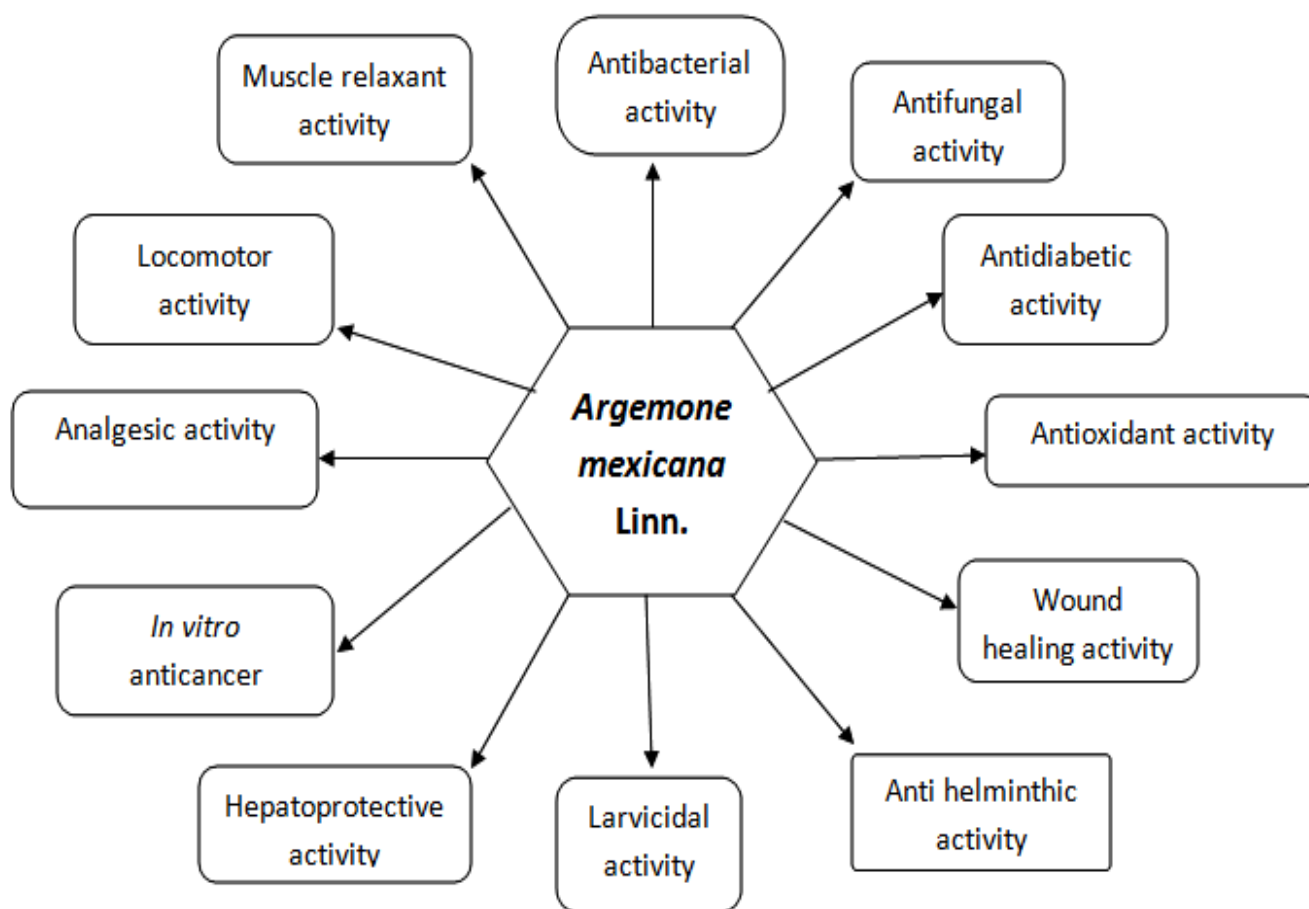
The whole plant of *A. mexicana* was reported to possess isoquinoline alkaloids such as berberine, cheilanthifoline, coptisine, muramine, scoulerine, stylopine, cryptopine, thalifone, sanguinarine, protopine, optisine, chelerytherine and benzylisoquinoline alkaloids<sup>29, 25, 30, 31, 32, 33</sup>. Alkaloids such as berberine, tetrahydroberberine, protopine and Benzophenanthridines have been isolated from the plant<sup>34</sup>. Seed oil otherwise called as Argemone oil reported to contain sanguinarine and dihydrosanguinarine. It also contains palmitic, myristic, oleic and linoleic acids<sup>35</sup>. Some of the structures of isolated compounds of this plant are shown in **Figure 2 and 3**.



**FIGURE 2: STRUCTURE OF BERBERINE**<sup>34</sup>



**FIGURE 3: STRUCTURE OF NORCHELERYTHRINE**<sup>29</sup>



**FIGURE 4: PHARMACOLOGICAL PROPERTIES OF ARGEMONE MEXICANA LINN**

**Recent Scientific investigations:**

**Antimicrobial activity:** The crude methanol and aqueous extracts (hot and cold) of leaves and seeds of *A. mexicana* is reported to possess antimicrobial activity against multi drug resistant pathogenic bacteria (*Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Pseudomonas aeruginosa*). Antimicrobial activity was carried out by agar well diffusion method. Methanol extract showed highest zone of inhibition for the tested organisms followed by hot and cold aqueous extracts<sup>36</sup>.

Antibacterial activity of different organic extracts (n-hexane, chloroform, methanol and water) of *A. mexicana* seed was reported against *E. coli*, *P. aeruginosa*, *Enterococcus* sp., *Salmonella typhi*, *S. aureus*, multi drug resistant *P. aeruginosa* and multidrug resistant *S. aureus*. Chloroform extract (500 mg/ml) showed efficient antimicrobial activity against all the test organisms whereas methanol extract (500 mg/ml) showed moderate activity against *P. aeruginosa*, *S. typhi* and *S. aureus*. However, n-Hexane and aqueous extract showed no activity<sup>37</sup>.

The essential oil from aerial and root parts of *A. mexicana* was evaluated for antimicrobial activity against *S. aureus*, *B. subtilis*, *Klebsiella pneumoniae*, *P. aeruginosa*, *Candida albicans*, *C. stellatoidea* and *C. torulopsis*. It showed efficacy in inhibiting the growth of selected bacteria and fungi among the tested organisms<sup>38</sup>.

N-demethyloxysanguinarine isolated from chloroform extract of *A. mexicana* has showed antibacterial activity against *K. pneumonia*, *S. aureus*, *E. coli* and *P. aeruginosa* with Minimum inhibitory concentration of 1.5625 to 3.125<sup>39</sup>.

The acetone, ethyl acetate and petroleum ether extracts of leaf and stem of *A. mexicana* was tested for its efficacy to inhibit water borne pathogens such as *E. coli*, *Shigella* sp., *Staphylococcus* sp. and *Salmonella* sp. Petroleum ether extract of both leaf and stem showed maximum activity, Ethyl acetate showed moderate activity where as acetone extract showed no activity against these water borne pathogens<sup>40</sup>.

**Antidiabetic activity:** Hypoglycemic potential of aerial parts of *A. mexicana* was reported in alloxan induced

diabetic rats. Treatment was carried out for 11 days with ethanol and aqueous extracts at a dose of 200 and 400 mg/kg body weight in diabetic rats. Treatment with aqueous extract (400 mg/kg body weight) showed significant reduction in blood glucose levels, plasma urea, creatinine, triglyceride, cholesterol values and recovery in body weight compared to diabetic control rats and the standard drug treated rats<sup>41</sup>.

Hydro alcoholic extract (200 and 400 mg/kg body weight) of aerial parts of *A. mexicana* reduced fasting blood glucose levels in Streptozotocin induced hyperglycemic Wistar albino rats. Metformin (300 mg/kg body wt) was used as a standard drug. The extract dosage of 400 mg/kg body weight showed an effective hypoglycemic activity in comparison with the standard<sup>42</sup>.

**Antioxidant activity:** Ethanol extract of *A. mexicana* root is reported to possess antioxidant activity. The extract showed high DPPH radical scavenging activity (85.17%), ABTS radical scavenging activity (75.27%) and H<sub>2</sub>O<sub>2</sub> radical scavenging activity (84.25%) at 100 µg/ml concentration. Extract showed dose dependent high free radical scavenging activity<sup>43</sup>.

Different solvents of *A. mexicana* leaves were reported to possess super oxide anion scavenging activity by Nitro blue tetrazolium assay. All the extracts exhibited maximum percentage of free radical scavenging at a dosage of 200 µg/ml. The highest radical scavenging activity was exhibited by acetone extract whose IC<sub>50</sub> value was double to that of L-ascorbic acid<sup>44</sup>.

**Wound Healing activity:** Different solvents extract of *A. mexicana* leaves were examined for wound healing activity in Wistar albino rats. The activity was carried out by excision, incision and dead space wound models. The results revealed that the treatment with methanol extract of leaves of *A. mexicana* accelerated wound healing agent in rats<sup>45</sup>.

**Anthelmintic activity:** The leaves of *A. mexicana* were extracted with alcohol and distilled water and was tested for anthelmintic activity in a dose dependent manner (6.25, 12.5, 25, 50, 100 mg/ml) against *Pheretima posthuma* and *Ascaridia galli*. At 100 mg/ml concentration, both the extracts showed significant anthelmintic activity<sup>46</sup>.

**Larvicidal activity:** Acetone fraction of petroleum ether extract of *A. mexicana* seed was reported to possess larvicidal activity against 2<sup>nd</sup> instar larvae of *Aedes aegypti*. Extract resulted in 100% mortality of the larva with LC<sub>50</sub> value of 13.58 and 17.43 in field and laboratory conditions respectively<sup>47</sup>.

**Hepatoprotective activity:** The antihepatotoxic action of aqueous extract of *A. mexicana* stem was reported in CCl<sub>4</sub> induced hepatotoxic male Albino wistar rats. Oral administration of 150 and 250 mg/kg body weight of the extract decreased serum aspartate transaminase, alanine aminotransferase and alkaline phosphatase levels. Increase in the body weight of treated rats was also reported<sup>48</sup>.

**Anticancer activity:** The ethanol extract of *A. mexicana* was reported to exhibit inhibitory activity against human cancer cell lines such as Hela-B75 (48%), HL-60 (20.15%) and PN-15 (58.11%)<sup>49</sup>.

**Neuropharmacological studies:** The ethyl acetate and methanol extract of the whole plant of *A. mexicana* was reported for analgesic activity, locomotor activity and muscle relaxant activity using Wistar albino mice at an oral dosage of 100, 200 and 400 mg/kg body weight. Both extracts showed significant activities but methanol extract at a dosage of 200 mg/kg body weight was found to be more potent for central nervous system activities such as analgesic, anxiolytic and sedative effects<sup>50</sup>.

**CONCLUSION:** It can be concluded that the plant *A. mexicana* is a valuable medicinal herb based on its numerous therapeutic properties in traditional medicinal system. Further, scientific investigations proved its pharmacological efficacy. This plant gives a hope to the pharmacologists to develop new drugs with no side effects. Moreover, steps should be undertaken for the conservation and proper utilization of *A. mexicana* plant.

**ACKNOWLEDGEMENT:** The Authors wish to express sincere gratitude to the Management and Staff of VIT University, Vellore, TN, India for supporting this study.

## REFERENCES:

- Sathish Kumar SR, Priya CL and Bhaskara Rao KV: Phytochemical composition, antimicrobial and hemolytic activity of *Solanum trilobatum* Linn. Pharmacologyonline News letter 2010; 3: 1336-1341.
- Muhit MA, Apu AS, Islam MS and Ahmed M: Cytotoxic and antimicrobial activity of the crude extract of *Abutilon Indicum*. Journal of Pharmacognosy and Phytochemical Research 2010; 2:1-4.
- Nagappa AN, Thakurdesai PA, Venkat R and Jiwan S: Antidiabetic activity of *Terminalia catappa* Linn fruits. Journal of Ethnopharmacology 2003; 88: 45-50.
- Sarang B, Anpurna K, Beenish K and Kumar GV: Anti-arthritis activity of a biopolymeric fraction from *Euphorbia tirucalli*. Journal of Ethno Pharmacology 2007; 110: 92-98.
- Priya CL, Kumar G, Karthik L and Bhaskara Rao KV: Antioxidant activity of *Achyranthes aspera* Linn stem extracts. Pharmacologyonline 2010; 2:228-237.
- Priya CL, Kumar G, Karthik L and Bhaskara Rao KV: Phytochemical composition and *in vitro* antioxidant activity of *Achyranthes aspera* Linn (Amaranthaceae) leaf extracts. Journal of Agricultural Technology 2012; 8: 143-156.
- Gupta R, Thakur B, Singh P, Singh HB, Sharma VD, Katoch VM and Chauhan SVS: Anti-tuberculosis activity of selected medicinal plants against multi-drug resistant *Mycobacterium tuberculosis* isolates. Indian Journal of Medical Research 2010; 131:809-813.
- Kalimuthu P, Rajesh V, Kannan BR, Balamuguran TM and Chandrasekar: Antiulcer activity of Methanolic extract of *Acalypha indica* Linn. (Euphorbiaceae) by Pylorous Ligtore and Swim Stress Induced Ulceration. Journal of Pharmacy Research 2010; 3:2779-2783.
- Reddy JS, Rao PR, Reddy MS: Wound healing effects of *Heliotropium indicum*, *Plumbago zeylanicum* and *Acalypha indica* in rats. Journal of Ethnopharmacology 2002; 79:249-251.
- Khare CP: Indian medicinal plants- An illustrated Dictionary. Springer science, Business media ILC, First Edition 2007.
- Siddiqui IA, Shaukat SS, Khan GH and Zaki MJ: Evaluation of *Argemone mexicana* for control of root-infecting fungi in potato. Journal of Phytopathology 2002; 150:321-329.
- Chopra RN, Chopra IC: Chopra's Indigenous drugs of India, Bimal Kumar Dhur of Academic publishers, 1933.
- Alagesaboopathi C: Ethnomedicinal plants and their utilization by villagers in Kumaragiri hills of Salem district of Tamil Nadu, India. African Journal of Traditional Complementary and Alternative medicines 2009; 6:222-227.
- Pullaiah T: Medicinal plants in Andhra Pradesh, India, Regency Publications, New Delhi, 1995.
- Sambamurthy AVSS: Taxonomy of Angiosperms, I. K. International Pvt Ltd, 2005.
- Millspaugh CF: American medicinal plants, Dover Publications Inc, 1975.
- Chopra RN, Nayar SL and Chopra IC: Glossary of Indian Medicinal plants, Council of Industrial Research, New Delhi, 1986.
- Jyothi AC, Santosh JP and Ganes PB: Screening of aqueous plant extracts against *Beauveria Bassiana* infection to 5th instar larvae of *Bombyx mori* L. Journal of Medicinal plants Research 2011;5:3936-3939.
- Osho A, Adentunji T: Antimicrobial activity of the essential oil of *Argemone mexicana* Linn. Journal of Medicinal plant Research 2010; 4:19-22.
- Ganesan G: Traditional oral care medicinal plants survey of Tamil Nadu. Natural product Radiance 2008; 7:166-172.

1. Sathish Kumar SR, Priya CL and Bhaskara Rao KV: Phytochemical composition, antimicrobial and hemolytic activity of *Solanum*

21. Chaudhari Rai HN, Pal DC and Tarafdar CR: Less Known uses of some plants from the tribal areas of Orissa. Bull botanical survey of India 1985;17:132-136.
22. Kala CP: Ethnomedicinal botany of the Apatani in the Eastern Himalayan region of India. Journal of Ethnobiology and Ethnomedicine 2005; 1:11.
23. Katewa BL, Chaudary and Jain A: Folk herbal medicines from tribal area of Rajasthan, India. Journal of Ethnopharmacology 2004; 92:41-46.
24. Hussain SF, Nakkady S, Khan L and Shamma M: Oxyhydrastinine, an isoquinoline alkaloid from the Papaveraceae. Phytochemistry 1983; 22: 319 – 320.
25. Nakkady S and Shamma M: Studies on the chemical constituents of *Argemone mexicana*. Egypt. Journal of Pharmaceutical Sciences 1988; 29: 53 – 61.
26. Dinda B and Bandyopadhyay MJ: Free amino acids of *Argemone mexicana*. Journal of Indian Chemical Society 1986; 63: 934 – 936.
27. Harborne JB and Williams CA: Flavonoids in the seeds of *Argemone mexicana*: A reappraisal. Phytochemistry 1983; 22: 1520 – 1521.
28. Gunstone FD, Holliday JA and Scrimgeour CM: The long-chain oxo acids (argemone acids) in *Argemone mexicana* seed oil. Chemistry and Physics of Lipids 1977; 4: 331 – 335.
29. Israilov IA and Yunusov MS: Alkaloids of four species of *Argemone*. Chemistry of Natural compounds 1986; 22:189-192.
30. Santos AC and Adkilen P: The alkaloids of *Argemone mexicana*. Journal of the American Chemical Society 1932; 54: 2923.
31. Yu B T and Muraveva DA: Isolation and determination of the alkaloids of *Argemone mexicana* grown in different geographic regions. Rast Resur 1973; 9:200.
32. Haisova K Y and Savik J: On the minor alkaloids from *Argemone mexicana*. Collection of Czechoslovak Chemical Communications 1975; 40:1576.
33. Chang YC, Chang FR, Ashraf TK, Hsieh PW and Wu YC: Cytotoxic Benzophenanthridine and Benzylisoquinoline Alkaloids from *Argemone Mexicana*. Z. Naturforsch 2003; 58: 521 – 526.
34. Kenneth W and Bentley:  $\beta$  - Phenylethylamines and the isoquinoline alkaloids. Natural Product Reports 2001; 18: 148–170.
35. Mukherjee A and Namhata D: Medicinal plantlore of the tribals of Sundargarh District, Orissa. Ethnobotany 1990; 2:57-60.
36. Bhattacharjee I, Chattarjee SK, Chattarjee K and Chandra G: Antibacterial potentiality of *Argemone mexicana* solvent extracts against some pathogenic bacteria. Memórias do Instituto Oswaldo Cruz 2006;101:645-648.
37. Sigh SK, Dharpandey V, Aradaha Sigh and Singh C: Antibacterial activity of seed extracts of *Argemone mexicana* L. on some pathogenic bacterial strains. African Journal of Biotechnology 2009; 8:7077-7081.
38. Bhattacharjee I, Chattarjee SK and Chandra G: Isolation and identification of antibacterial components in seed extracts of *Argemone mexicana* L. (Papaveraceae), Asian Pacific Journal of Tropical medicine 2010; 3:547-551.
39. Shahedur Rahman Md, Faizus salehin Md, Parvin A and Alam K: Antibacterial activity of *Argemone mexicana* L against water borne microbes. Research journal of medicinal plant 2011; 5:621-626.
40. Nayak P, Kar DM and Maharana L: Antidiabetic activity of aerial parts of *Argemone mexicana* linn. in alloxan induced hyperglycaemic rats. Pharmacologyonline1 2011; 1:889-903.
41. Rout SP, Kar DM and Mandal PK: Hypoglycaemic activity of aerial parts of *Argemone mexicana* l in experimental rat models. International Journal of Pharmacy and Pharmaceutical sciences 2011; 3:533-540.
42. Perumal P, Sekar V, Rajesh V, Gandhimathi S, Kumar RS and Nazimudin KHS: *In vitro* Antioxidant Activity of *Argemone mexicana* Roots. International Journal of PharmTech Research 2010; 2:1477-1482.
43. Bhardwaj M, Surekha and Duhan JS: Free radical-scavenging and antimutagenic potential of acetone, chloroform and methanol extracts of leaf of *Argemone mexicana*, International Journal of Pharma and Biosciences 2011; 2:455-464.
44. Dash GK and Murthy PN: Evaluation of *Argemone mexicana* Linn. leaves for wound healing activity. Journal of Natural Product Plant Resources 2011; 1:46-56.
45. Majeed A, Taju G, Nathiga Nambi KS and Menaka H: Anthelmintic activity of *Argemone mexicana* leaves extract against *Pheretima prosthuma* and *Ascaridia galli*. Research Journal of Pharmaceutical, Biological and Chemical Sciences 2011; 2:773-777.
46. Sakthivadivel M and Thilagavathy D: Larvicidal and chemosterilant activity of the acetone fraction of petroleum ether extract from *Argemone mexicana* L. seed. Bioresource Technology 2003; 89:213-216.
47. Willcox ML, Graz B and Falquet J: *Argemone mexicana* decoction for the treatment of uncomplicated falciparum malaria. Transactions of the Royal Society of Tropical Medicine and Hygiene 2007; 101: 1190–1198.
48. Das PK, Sethi R, Panda P and Pani SR: Hepatoprotective activity of plant *Argemone mexicana* (linn) against carbon tetrachloride (cc14) induced hepatotoxicity in rats. International Journal of Pharmaceutical Research and Development 2009; 8:1-20.
49. Gacche RN, Shaikh RU and Pund MM: *In vitro* evaluation of anticancer and antimicrobial activity of selected medicinal plants from Ayurveda, Asian Journal of Traditional Medicines 2011; 6:127-133.
50. Amaritha S and Chaudhari S: Neuropharmacological study of *Argemone mexicana* Linn. Journal of Applied Pharmaceutical Science 2011; 1:121-126.

**How to cite this article:**

Priya CL and Rao KVB: Ethanobotanical and Current Ethanopharmacological Aspects of *Argemone Mexicana* Linn: An Overview. *Int J Pharm Sci Res*, 2012; Vol. 3(7): 2143-2148.