



INDEX COPERNICUS
VALUE:83.27(2015);
83.05(2016); 90.17(2017)

NAAS SCORE : 4.32
(2017 to 2019)

Received on:

28th May 2019

Revised on:

1st June 2019

Accepted on:

12th June 2019

Published on:

1st July 2019

Volume No.

Online & Print

26

Page No.

11 to 17

IRJC is an international open access print & online journal, peer reviewed, worldwide abstract listed, published quarterly with ISSN, Free membership, downloads and access.

ANTIMICROBIAL ACTIVITY OF EXTRACTION OF ARGEMONE MEXICANA AND IT'S COMBINATION ALONG WITH ANTIBIOTICS

RAMESHCHANDRA SING¹, NIRAJ SHAH², R. T. PATEL³ AND PIYUSH J. VYAS⁴

1. PACIFIC UNIVERSITY, UDAIPUR, RAJASTHAN.

2. J & J SCIENCE COLLEGE, NADIYAD.

3. MUNICIPAL ARTS AND URBAN BANK SCIENCE COLLEGE, MAHESHANA.

4. CHEMISTRY DEPARTMENT, SHETH M. N SCIENCE COLLEGE, PATAN, GUJARAT, INDIA.

Corresponding author email: vyaspiyushj@yahoo.co.in

ABSTRACT:

Plant extracts have showed effective antimicrobial activity against microorganism and Fungi. A. Mexicana is a vital medicative plant used as medicines for numerous ailments since earlier period. Combination of flavourer extracts and antibiotics are accustomed decrease aspect result of medical care medicine and additionally used to increase sensitivity of plant extracts. Day by day, microorganism restitution protein against ancient antibiotics and changing into a lot of powerful. To prevent their create power, combination of plant extracts and antibiotics offer one among the most effective leads to such direction. If nontoxic plant extracts are taken in appropriate doses, it should prove best supplementary remedies for patient. This is often in vitro study and such combination should be followed by toxicity take a look at and in vivo tests to see its therapeutic application against the take a look at organisms.

KEYWORDS: Antibiotics, antimicrobial activity, Argemone mexicana.

INTRODUCTION:

Plants has used many as herbs such as turmeric possibly as early as 4,000

BC. [1,2] The Rig Veda, and Atharva Veda are some of the earliest available documents detailing the medical knowledge that formed the basis of the Ayurveda system. [3] *Argemone mexicana* L. is employed as a medicative plant in many countries. devil's fig L. could be a species of flower found in Asian nation, Bangladesh, Mexico and currently has wide naturalized within the U. S., Ethiopia. In India, the smoke of the seeds is employed to alleviate odontalgia. [4-5] The plant contains alkaloids like isocorydine, berberine, [6] jatrorrhizine, columbamine, dihydrocoptisine, [7] coptisine, argemexicaine A, argemexicaine, Omethylzanthoxyline B, angoline. [8] aminoalkanoic acid like aminoalkanoic acid and essential amino acid also are present in leaves of the plant. [9] ; Flavonoids like luteolin, eriodictyol, [10] isorhamnetin, isorhamnetin-3,7-O- β -Ddiglucopyranoside, [11] quercetin, rutin, mexitin, [12] ; Phenolics and aromatic acids like phenol, caffeic acid, ferulic acid, [7] carboxylic acid and cinnamic Acid [13]; Miscellaneous like α -tocopherol, adenosine, purine [14]

The recent yellow, whitish seed extract contains protein-dissolving substances, effective within the treatment of warts, cold sores, connective tissue infections, skin diseases, itches and conjunctival puffiness and jaundice. [15] It contains alkaloids almost like those within the poppy so will be used as a gentle pain-killer. [16] attributable to its varied ethnopharmacological properties, the current investigation was undertaken to gauge the medicine potential of *A. mexicana* L. stem extracts against a variety of foodborne unhealthful microorganism with the attainable use as a natural antimicrobial agent in pharmaceutical or food industries. [15].

MATERIALS AND METHODS

Material uses for Study

Antibiotics

Antifungal antibiotics: Amphotericin-B, Fluconazole

Microorganisms

Fungi: *Aspergillus niger*, *Candida albicans*.

The plant material of the *Argemone Mexicana* was gathered from the nearby market. Dry powder of plant material was extracted with acetone, ethanol and methanol using Soxhlet apparatus. The filtrate was evaporated to dryness utilizing rotating evaporator. Dry concentrates were put away appropriately till use.

Antimicrobial Analysis

Antimicrobial activities of various plant extract and their combination were determined by zone of inhibition technique. Antimicrobial exercises of plant extract two pathogenic organisms was explored by agar diffusion method. Antimicrobial exercises were set up by utilizing agar cup strategy. Each sanitized concentrate was disintegrated in dimethyl sulfoxide, disinfected anti-infection agents were utilized by filtration and remain at 40 C. A standard anti-microbial was utilized for examination of the outcomes.

RESULTS:

Table 1 shows antifungal activity of Argemone Mexicana extract for 25 μ l. It shows 9mm growth with A. Niger and 10mm growth with C. Albicans for 1000 μ g/ml Concentration. Here with decreasing concentration zone of inhibition decreasing. While table 4 shows antifungal activity of Argemone Mexicana extract for 50 μ l. Activity shows antifungal effect of Methanol extract shows good antifungal effect against Candida Albicans.

Table 2 shows antifungal activity of combination of *Argemone mexicana* extract and its combination with Amphotericin B. Synergic effect observed for combination saw 22mm and 16mm growth against A. Niger and C. Albicans afterwards. As per table 5 combination of *Argemone mexicana* and Amphotericin B extract for 50 μ l is very effective against A. Niger.

Table 3 shows antifungal activity of combination of *Argemone mexicana* extract and its combination with fluconazole. With increasing concentration from 125 to 1000 μ g/ml, zone of inhibition increasing, and Methanol extract shows better results. Combination shows good antifungal activity compare to Fluconazole pure. Table 6 shows Fluconazole and its combination with *Argemone mexicana* extract were very fine synergic effect for 50 μ l.

REFERENCES:

1. Susan G. Wynn; Barbara Fougère Veterinary Herbal Medicine. Elsevier Health Sciences. (2007). 60
2. Aggarwal, B. B., Surh, Y. J., & Shishodia, S. (Eds.). (2007). The molecular targets and therapeutic uses of curcumin in health and disease (Vol. 595). Springer Science & Business Media.
3. Sumner, J. (2000). The natural history of medicinal plants. Timber press.
4. Chopra, Ram Nath, and Sham Lal Nayar. Glossary of Indian medicinal plants. Council of Scientific and Industrial Research; New Delhi, 1956.
5. Bhattacharjee, Indranil, Soroj Kumar Chatterjee, Soumendranath Chatterjee, and Goutam Chandra. "Antibacterial potentiality of Argemone mexicana solvent extracts against some pathogenic bacteria." Memórias do Instituto Oswaldo Cruz 101, no. 6 (2006): 645-648.

6. Israilov, I. A., and M. S. Yuhusov. "Alkaloids of four Argemone species." *Khim Prir Soedin* 2 (1986): 204-206.
7. Singh, Sarita, Amitabh Singh, Jyostana Jaiswal, T. D. Singh, V. P. Singh, V. B. Pandey, Aparna Tiwari, and U. P. Singh. "Antifungal activity of the mixture of quaternary alkaloids isolated from *Argemone mexicana* against some phytopathogenic fungi." *Archives of Phytopathology and Plant Protection* 43, no. 8 (2010): 769-774.
8. Chang, Yuh-Chwen, Pei-Wen Hsieh, Fang-Rong Chang, Ru-Rong Wu, Chih-Chuang Liaw, Kuo-Hsiung Lee, and Yang-Chang Wu. "Two new protopines argemexicaines A and B and the anti-HIV alkaloid 6-acetyldihydrochelerythrine from formosan *Argemone mexicana*." *Planta medica* 69, no. 02 (2003): 148-152.
9. Sukumar, D., R. Arivudai Nambi, and N. Sulochana. "Studies on the leaves of *Argemone mexicana*." *Fitoterapia* (1984).
10. Harborne, Jeffrey B., and Christine A. Williams. "Flavonoids in the seeds of *Argemone mexicana*: a reappraisal." *Phytochemistry* 22, no. 6 (1983): 1520-1521.
11. Krishnamurti, M., J. D. Ramanathan, T. R. Seshadri, and P. R. Sharkaran. "Flavonol glycosides of *Argemone mexicana* flowers." *Indian Journal of Chemistry* 3 (1965): 270-272.
12. Singh, Sarita, Vidya Bhushan Pandey, and Tryambak Deo Singh. "Alkaloids and flavonoids of *Argemone mexicana*." *Natural product research* 26, no. 1 (2012): 16-21.
13. Dwivedi, S., A. Dwivedi, and R. Kapadia. "*Argemone mexicana* Linn.(Ghamoya): A weed having great therapeutic values in folk remedies." *Pharm Rev* 6 (2008).
14. Chang, Yuh-Chwen, Fang-Rong Chang, Ashraf T. Khalil, Pei-Wen Hsieh, and Yang-Chang Wu. "Cytotoxic benzophenanthridine and benzyloquinoline alkaloids from *Argemone mexicana*." *Zeitschrift für Naturforschung C* 58, no. 7-8 (2003): 521-526.
15. Rahman, M. Mashiar, Md Jahangir Alam, Shamima Akhtar Sharmin, M. Mizanur Rahman, Atiqur Rahman, and M. F. Alam. "In vitro antibacterial activity of *Argemone mexicana* L (Papaveraceae)." *CMU J Nat Sci* 8 (2009): 77-84.
16. Chevallier, Andrew. *The encyclopedia of medicinal plants: [a practical reference guide to over 550 key herbs & their medicinal uses]*. London: Dorling Kindersley, 1996.

Antimicrobial Analysis *Argemone mexicana*, antibiotics and their combination for 25 µl

Table 1. Shows antifungal activity of combination of *Argemone mexicana* for 25 µl.

Fungi	Acetone extract				Ethanol extract				Methanol extract			
	Concentration (µg/ml)											
	1000 25µl	500 25µl	250 25µl	125 25µl	1000 25µl	500 25µl	250 25µl	125 25µl	1000 25µl	500 25µl	250 25µl	125 25µl
Aspergillus Niger	8 mm	7 mm	5 mm	4 mm	8 mm	7 mm	6 mm	4 mm	9 mm	8 mm	7 mm	6 mm
Candida Albicum	8 mm	7 mm	6 mm	6 mm	7 mm	8 mm	7 mm	6 mm	10 mm	9 mm	8 mm	7 mm

Table 2. Shows antifungal activity of combination of *Argemone mexicana* with amphotericin B for 25 µl.

Fungi	Ampho (µg/ml)	Acetone extract + Ampho				Ethanol extract + Ampho				Methanol extract + Ampho			
		Concentration (µg/ml)											
	25 µl	1000 25µl	500 25µl	250 25µl	125 25µl	1000 25µl	500 25µl	250 25µl	125 25µl	1000 25µl	500 25µl	250 25µl	125 25µl
Aspergillus Niger	15 Mm	23 mm	25 mm	24 mm	24 mm	31 mm	28 mm	28 mm	28 mm	22 mm	22 mm	21 mm	18 mm
Candida Albicum	9 Mm	15 mm	15 mm	14 mm	12 mm	16 mm	15 mm	13 mm	11 mm	16 mm	15 mm	14 mm	11 mm

Table 3. Shows antifungal activity of combination of *Argemone mexicana* with Fluconazole for 25 µl.

Fungi	Fluco (µg/ml)	Acetone extract + Fluco				Ethanol extract + Fluco				Methanol extract + Fluco			
		Concentration (µg/ml)											
		1000	500	250	125	1000	500	250	125	1000	500	250	125
	25 µl	25µl	25µl	25µl	25µl	25µl	25µl	25µl	25µl	25µl	25µl	25µl	25µl
Aspergillus Niger	1 mm	6 mm	6 mm	4 mm	4 mm	8 mm	6 mm	5 mm	4 mm	9 mm	8 mm	8 mm	5 mm
Candida Albicum	1 mm	9 mm	8 mm	7 mm	5 mm	10 mm	10 mm	7 mm	8 mm	10 mm	9 mm	8 mm	6 mm

Antimicrobial Analysis *Argemone mexicana*, antibiotics and their combination for 50 µl

Table 4. Shows antifungal activity of *Argemone mexicana* extract for 50 µl.

Fungi	Acetone extract				Ethanol extract				Methanol extract			
	Concentration (µg/ml)											
	1000	500	250	125	1000	500	250	125	1000	500	250	125
	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl
Aspergillus Niger	9 mm	9 mm	7 mm	6 mm	9 mm	9 mm	8 mm	7 mm	10 mm	9 mm	9 mm	7 mm
Candida Albicum	9 mm	8 mm	7 mm	6 mm	10 mm	9 mm	8 mm	7 mm	12 mm	10 mm	8 mm	7 mm

Table 5. Shows antifungal activity of combination of *Argemone mexicana* with Amphotericin B for 50 µl.

Bacteria	Ampho (µg/ml)	Acetone extract + Ampho				Ethanol extract + Ampho				Methanol extract + Ampho			
		Concentration (µg/ml)											
		1000	500	250	125	1000	500	250	125	1000	500	250	125
	50 µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl
Aspergillus Niger	22 mm	27 mm	27 mm	26 mm	25 mm	32 mm	28 mm	26 mm	25 mm	25 mm	23 mm	23 mm	22 mm
Candida Albicum	11 mm	15 mm	16 mm	15 mm	13 mm	18 mm	16 mm	15 mm	14 mm	17 mm	18 mm	16 mm	15 mm

Table 6. Shows antifungal activity of combination of *Argemone mexicana* with Fluconazole for 50 µl.

Bacteria	Fluco (µg/ml)	Acetone extract + Fluco				Ethanol extract + Fluco				Methanol extract + Fluco			
		Concentration (µg/ml)											
		1000	500	250	125	1000	500	250	125	1000	500	250	125
	50 µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl
Aspergillus Niger	1 mm	9 mm	9 mm	8 mm	7 mm	8 mm	9 mm	8 mm	8 mm	10 mm	9 mm	8 mm	7 mm
Candida Albicum	1 mm	8 mm	8 mm	7 mm	6 mm	10 mm	8 mm	7 mm	6 mm	9 mm	8 mm	7 mm	6 mm

