

IN VITRO ANTIBACTERIAL POTENTIALS OF SAP OF *AZADIRACHTA INDICA*

Tribhuvan Singh*, K. Rajeshwar Datt, Syed Imran Ul Haq, Ibrahim Makintami Ibrahim, Ruchi Kumari, T. Bhavitha.

Guru Nanak Institutions Technical Campus - School of Pharmacy Ibrahimpattnam, Hyderabad- 501506.

Corresponding Author: Dr. Tribhuvan Singh

Guru Nanak Institutions Technical Campus - School of Pharmacy Ibrahimpattnam, Hyderabad- 501506.

Article Received on 11/07/2016

Article Revised on 31/07/2016

Article Accepted on 21/08/2016

ABSTRACT

The present research was conducted and determined, in vitro antibacterial activity of Sap of *Azadirachta indica*. Bacteria such as *E.coli*, *S. aureus*, *B.subtilis*, *K. pneumonia*, cause severe health issues to millions of people around the world. Data shown that extracts found from various parts of the herbal plants exhibited significant antibacterial activity against these bacteria. We determined antibacterial activity of Sap of *Azadirachta indica*. The antibacterial activities in four respective different volumes (1, 1.5, 2, 2.5 ml) were evaluated by zone of inhibition of 12 to 25mm of the bacteria were determined. Sap of *Azadirachta indica* exhibited excellent antibacterial activity. In vitro studies on Sap of *Azadirachta indica* successfully found to exhibits significant anti bacterial activity.

KEY WORDS: *Azadirachta indica*; Antibacterial Activity; Zone of Inhibition.

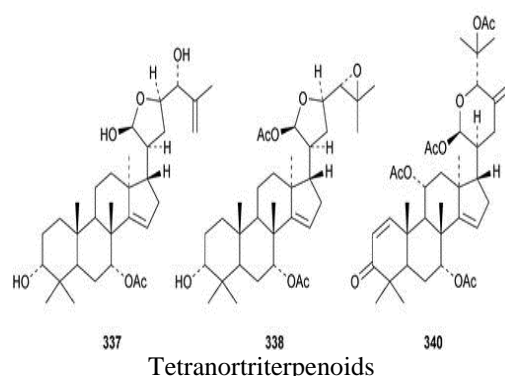
INTRODUCTION

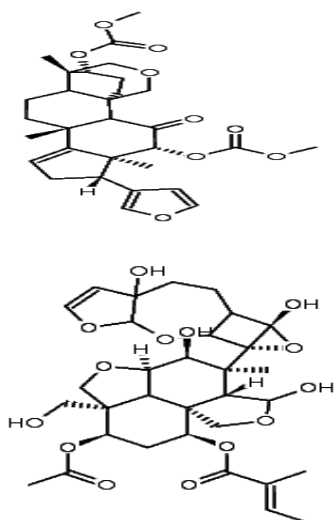
Plants are used for medical treatments through a lot of of human history, and such medication continues to be wide practiced nowadays. Plant components resembling leaves, seeds, bark, berries, sap, roots, or flowers are widely used for medicinal property. herbal medication acknowledges herbalism as a form of medication. The world Health Organization^{9,15} estimates that eightieth of the populations of some Asian and African countries presently use herbal medication for a few facet of primary health care. Some synthetic medicine also are used for medicament activity like ofloxacin, Ciprofloxacin and gatifloxacin that have wide spectrum of activities.

Mostly marketed medicines are effective in dominant the infection however some medicines are valuable and show side effects. About 70-80% population worldwide of many countries depends on plants for primary health care. Many Indian's still use these natural systems of medicines, it is free from toxicity and provide value effective treatment. Some bacterium like *E.coli*, *S. aureus*, *B. subtilis*, *K. pneumonia* causes severe health issues to various people throughout the world, these infections are related to low standard of hygiene, mostly billions of people are calculable to be infected annually worldwide.

The Sap of *Azadirachta indica* is indigenous or naturalized compound through worldwide. It is particularly found in India, Pakistan, Bangladesh, Nepal, Myanmar and Cambodia, where it is easily planted. It can grow and develops in all types of soils with light to

heavy texture and even on the poorest nutrients supply. It prefers in various type of soils. It was secreted from stem of old *azadirachta indica* trees. It also has water logging capacity. The Sap of *Azadirachta indica* has been reported to have chemical constituents such as tetranortriterpenoids, azadirone, epoxyazadiradione, nimbin, gedunin, azadiradione, azadirachtinA, azadiradione, azadirachtol, deacetylnimbin, and 17-hydroxyazadiradione. The Sap of *Azadirachta indica* has been reported to have antimicrobial^[7,8,13] antioxidant^[3], anti tubercular^[7], anti ulcer^[11], anti malarial, anthelmintic^[8,10,17] anti diabetic activity^[9,10] and antiseptic activity^[11]





AzadirachtinA
Azadirachtol

MATERIALS AND METHODS^[1]

Sap of *Azadirachta indica* was found and collected from very old tree of *Azadirachta indica* in the month of May 2016, from Fattepur Village, Purushottampur Post, Chunar Taluka, Mirzapur District, Uttar Pradesh, with

proper care and instructions to protect any adulteration. Sap of was taken with different volumes (1, 1.5, 2, 2.5 ml). ofloxacin is used as standard drug, against Bacteria such as *E.coli*, *S. aureus*, *B.subtilis*, *K. pneumonia*.

PROCEDURE

ANTIBACTERIAL ACTIVITY^[2]

Antibacterial activity on *E.coli*, *S. aureus*, *B.subtilis*, *K. pneumonia* was determined and zone of inhibition is calculated at specific volumes (1, 1.5, 2, 2.5 ml) were identified. The antibacterial activity was prominently showed and the result was excellent.

RESULTS AND DISCUSSION

The antibacterial activity of Sap of *Azadirachta indica* is studied with four different volumes (1, 1.5, 2, 2.5 ml) against *E.coli*, *S. aureus*, *B.subtilis*, *K. pneumonia* was determined by cup plate method and nutrient agar media and compared with standard drug ofloxacin at the concentration 50µg /ml against gram +ve and gram -ve bacteria in this studies. Data in Table No.1 clearly shown that Sap of *Azadirachta indica* exhibit antibacterial activity. The zone of inhibition of the Sap of *Azadirachta indica* was between 12 to 25 mm at (1, 1.5, 2, 2.5 ml) respectively.

TABLE NO.1

Antibacterial activity of Sap of *Azadirachta indica* with Standard Drug

Zone of Inhibition - Diameter (in mm)					
Name		<i>E.coli</i>	<i>S. aureus</i>	<i>B. subtilis</i>	<i>K. pneumonia</i>
Sap of <i>Azadirachta indica</i> (T) ml	1ml	14	13	13	12
	1.5ml	17	18	19	17
	2ml	19	20	20	17
	2.5ml	25	24	24	25
Ofloxacin (S) µg/ml	50µg	28	30	30	27

CONCLUSION

The recent study on antibacterial activity of Sap of *Azadirachta indica* was determined and various components present in the Sap of *Azadirachta indica* are responsible for antibacterial activity. Sap of *Azadirachta indica* was found to have excellent antibacterial activity as compared to standard drug used for the study.

ACKNOWLEDGEMENTS

We are very thankful to Dr. Veeranna, Director, GNIT Campus, Ibrahimpatnam, Hyderabad, for providing necessary facilities to carry out the research work.

REFERENCE

- Sastry, Y. Nagendra; Padmaja, I. Jyothi; Rao, P. Rajeswara; Kirani, K. R. L. .Surya; Dsvgk, Kaladhar; Devi, T. Sai; Parvathi, T.; Gangadhar, H.; Kumar, K. Siva; Rao, D. Govinda. In Vitro Dose Dependent Study on Anti Human Pathogenic Bacterial and Free Radical Scavenging Activities of Methanolic Seed Coat Extract of *Azadirachta indica* L. 2012; 5(2): 83-6.
- Govinda Rao Duddukuri, Y. Nagendra Sastry, D.S.V.G.K. Kaladhar, K. Kamalakara Rao, K. Krishna Chaitanya. Antibacterial Activity of Methanolic Seed Coat Extract of *Borassus Flabellifer*L. Int J Res Pharm Sci Res, 2011; 2(9): 2435-438.
- Tribhuvan S, Brijendra kumar soni, In vitro antioxidant studies of some 1, 3, 4 -thiadiazole derivatives, Int J Res Pharm Bio Sci, 2011; 2(4): 1590-592.
- Tribhuvan S, Brijendra KS, Vishanu Vardhan Reddy B. (Synthesis and evaluation of thiazolidinones derivatives for their pharmacological activity). Int J Res Pharm Bio Sci, 2011; 2(4): 1562-567.
- Okeke IN, Laxminarayan R, Bhutta ZA, Antimicrobial resistance in developing countries recent trends and current status, Lancet Infection Disease, 2005; 5: 481-93.
- Tribhuvan S, Brijendra KS, Vishanu Vardhan Reddy B, Shalendra Bhandarkar. (Synthesis characterization and pharmacological activity of novel pyrimidine analogues). Int J Pharm Sci Rev Res, 2011; 11(1): 110-14.

7. Aswar M, Aswar U, Watkar B, Vyas M, Wagh A, Gujar NK, Antibacterial activity of *Ficus benghalensis*, J Bio Sci, 2008;170-72.
8. Tribhuvan S, Narendra Sharath Chandra JN, Ravi Kumar V, Shruthi J, Sharvani Y. (In vitro Anthelmintic activity on Guru Nanak Chyawanprash). J Pharm Sci Bio Res, 2015; 5(5): 444-46.
9. King J, Jagatheeson KA. (Photochemical methods and disease for Medicinal plants). J Clini Path, 1959; 12(3): 85-89.
10. Tribhuvan S, Deepak KS. (Synthesis of thiazolidine-4-one for their Anthelmintic activity). Uni J Pharm Bio Sci, 2014; 2(1): 13-15.
11. Tribhuvan S, Sreenivas SA, Parameshwar R, Abhimanyu S. (Synthesis and evaluation of novel pyrimidyl thiomethyl and pyrimidyl sulfinylmethyl benzimidazoles derivatives for their antiulcer activity). Int J Bio, 2012; 6(5): 256-59.
12. Víctor D, Szewczuk ER, Alicia PB. (Antiparasitic activity of *Melia azedarach* growing). J Arge, 2004; 4(5): 54-57.
13. Tribhuvan S, Deepak KS. (Synthesis and evaluation of thiazolidine-4-one for their Antibacterial activity). J Pharm Sci Bio Res, 2014; 4(1): 110-13.
14. Tribhuvan S, Dhiraj K, Himansu BS, Sudhakar P. (Synthesis Characterization and Pharmacological Activity of Novel Thiadiazole Analogues). Int Res J Pharm, 2012; 3(4): 390-92.
15. Caroline J, Gross MS, Dian NS. (Medicinal plants study Pakistan). J Bio Sci, 2003; 6(4): 1564-73.
16. Tribhuvan S, Ravi Kumar V, Amol DG, Gajanan S, Anjaiah B, Roja K. In Vitro Antipyrial Activity of *Psidium Guajava* Leaf Extract. Euro J Pharm Med Res, 2016; 3(1): 312-15.
17. Tribhuvan S, Ravi Kumar V, Kumanan R, Yashaseini Y, Pravalika D, Pravalika V. (Comparative study of in vitro anthelmintic activity of sap *borassus flabellifer*). World J Pharm Sci, 2015; 5(1): 701-06
18. Tribhuvan S, Ravi Kumar V, Syed Imran Ul Haq, P Sneha, Evaluation of the antibacterial potential of of sap *borassus flabellifer*. Int J Pharmacy Pharm Resi, 2016; 6(1): 150-55.