

Vol III Issue VII Jan 2014

Impact Factor : 1. 9508(UIF)

ISSN No :2231-5063

# International Multidisciplinary Research Journal

## *Golden Research Thoughts*

Chief Editor  
Dr.Tukaram Narayan Shinde

Publisher  
Mrs.Laxmi Ashok Yakkaldevi

Associate Editor  
Dr.Rajani Dalvi

Honorary  
Mr.Ashok Yakkaldevi

**IMPACT FACTOR : 1. 9508(UIF)**

**Welcome to GRT**

**RNI MAHMUL/2011/38595**

**ISSN No.2231-5063**

Golden Research Thoughts Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board. Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

***International Advisory Board***

Flávio de São Pedro Filho Federal University of Rondonia, Brazil	Mohammad Hailat Dept. of Mathematical Sciences, University of South Carolina Aiken	Hasan Baktir English Language and Literature Department, Kayseri
Kamani Perera Regional Center For Strategic Studies, Sri Lanka	Abdullah Sabbagh Engineering Studies, Sydney	Ghayoor Abbas Chotana Dept of Chemistry, Lahore University of Management Sciences[PK]
Janaki Sinnasamy Librarian, University of Malaya	Catalina Neculai University of Coventry, UK	Anna Maria Constantinovici AL. I. Cuza University, Romania
Romona Mihaila Spiru Haret University, Romania	Ecaterina Patrascu Spiru Haret University, Bucharest	Horia Patrascu Spiru Haret University, Bucharest,Romania
Delia Serbescu Spiru Haret University, Bucharest, Romania	Loredana Bosca Spiru Haret University, Romania	Ilie Pinteau, Spiru Haret University, Romania
Anurag Misra DBS College, Kanpur	Fabricio Moraes de Almeida Federal University of Rondonia, Brazil	Xiaohua Yang PhD, USA
Titus PopPhD, Partium Christian University, Oradea,Romania	George - Calin SERITAN Faculty of Philosophy and Socio-Political Sciences AL. I. Cuza University, Iasi	.....More

***Editorial Board***

Pratap Vyamktrao Naikwade ASP College Devrukh,Ratnagiri,MS India	Iresh Swami Ex - VC. Solapur University, Solapur	Rajendra Shendge Director, B.C.U.D. Solapur University, Solapur
R. R. Patil Head Geology Department Solapur University,Solapur	N.S. Dhaygude Ex. Prin. Dayanand College, Solapur	R. R. Yaliker Director Managment Institute, Solapur
Rama Bhosale Prin. and Jt. Director Higher Education, Panvel	Narendra Kadu Jt. Director Higher Education, Pune	Umesh Rajderkar Head Humanities & Social Science YCMOU,Nashik
Salve R. N. Department of Sociology, Shivaji University,Kolhapur	K. M. Bhandarkar Praful Patel College of Education, Gondia	S. R. Pandya Head Education Dept. Mumbai University, Mumbai
Govind P. Shinde Bharati Vidyapeeth School of Distance Education Center, Navi Mumbai	Sonal Singh Vikram University, Ujjain	Alka Darshan Shrivastava Shaskiya Snatkottar Mahavidyalaya, Dhar
Chakane Sanjay Dnyaneshwar Arts, Science & Commerce College, Indapur, Pune	G. P. Patankar S. D. M. Degree College, Honavar, Karnataka	Rahul Shriram Sudke Devi Ahilya Vishwavidyalaya, Indore
Awadhesh Kumar Shirotriya Secretary,Play India Play,Meerut(U.P.)	Maj. S. Bakhtiar Choudhary Director,Hyderabad AP India.	S.KANNAN Annamalai University,TN
	S.Parvathi Devi Ph.D.-University of Allahabad	Satish Kumar Kalhotra Maulana Azad National Urdu University
	Sonal Singh, Vikram University, Ujjain	

**Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India  
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.aygrt.isrj.net**



## ANTHELMINTIC ACTIVITY OF ETHANOLIC BUD EXTRACT OF *SYZYGIVM AROMATICUM* AGAINST *PHERETIMA POSTHUMA*

R. N. Patil , J. S. Kadam , J. A. Chavan and A. J. Salunkhe

P.G.Dept. of Zoology, Sadguru Gadage Maharaj College, Karad (M.S.)

**Abstract:**-The aim of the present study was to investigate anthelmintic potential of ethanolic bud extract of *Syzygium aromaticum* by using *Pheritima posthuma* as test worms. Three concentrations (2.5 , 5 and 10 mg/ml) of ethanolic bud extracts of *S. aromaticum* were tested in the assay. Albendazole (20 mg/ml) was used as a standard reference and distilled water as a control. The time of paralysis and the time of death of worms were considered as the parameters to assess the anthelmintic action. It was noticed in the investigation that the time of paralysis and the death of worms was dose dependent and was much earlier in all three test concentrations of ethanolic bud extract of *S. aromaticum* as compared to Albendazole (Standard). From the result it is concluded that the ethanolic bud extract of *S. aromaticum* is much potent anthelmintic natural source which might be helpful against the helminthes infection.

**Keywords:** *Syzygium aromaticum* , anthelmintic activity , *Pheritima posthuma*.

### INTRODUCTION:

Medicinal plants and derived medicine are widely used in traditional cultures all over the world and they are becoming increasingly popular in modern society as natural alternatives to synthetic chemicals (Ben et al., 2009). In the last few decades there has been an exponential growth in the field of herbal medicine. It is getting popularized in developing and developed countries owing to its natural origin and lesser side effects (Patel et al., 2001). Anthelmintics are the drugs that either kill (Vermicide) or expel (Vermifuge) infesting helminthiasis. Helminthiasis is prevalent globally and almost 1/3<sup>rd</sup> of world's population harbours them but it is more common in developing countries with poorer personal and environmental hygiene. They harm the host by depriving him of food causing blood loss, injury to organ, intestinal or lymphatic obstruction and by secreting toxins (Tripathi, 2003 and Mahadik, 1998). The plants are known to provide a rich source of botanical anthelmintics (Satyavati, 1926, Lewis, 1977). A number of medicinal plants have been used to treat parasitic infections in man and animals (Nadkarni, 1954; Chopra, 1956; Said, 1969; Akthar, 2000 and Iqbal, 2004). The *S. aromaticum* traditionally used for antibacterial (Pandey and Singh, 2011), anti-inflammatory (Kadam, et al., 2009) , antioxidant (Shyamala et al., 2003), antiplatelet (Shrivastava et al., 1993), antifungal (Pinto et al., 2009), antiviral (Banerjee et al., 2005) purpose.

### MATERIALS AND METHODS

#### Experimental Animals

The earthworms were collected from their natural habitat. They were brought in the Department of Zoology and identified based on the available literature as *Pheritima posthuma*. Then they were cultured in laboratory. The adult earthworms of 5-7 cm length were used for the present experimentation.

#### Plant Material

*Syzygium aromaticum* bud extract is used as an anthelmintic drug. It is commonly called as the clove tree that belongs to the plant family Myrtaceae. This aromatic tree grows to height of 25 to 40 feet and has opposite oval leaves. Its flowers grow in bunches at the end of the branches. The flowers are red and white when developed, but are usually harvested before they

open. They are dried in sun and the yellowish coloured buds are changed into dark brown. The dried buds, which are about ½ inch long, are used in kitchen as spice. The dried flower buds of the tree which are pungent and aromatic are used for therapeutic purpose. Cloves are harvested when 1.5-2 cm long and consist of long calyx, terminating in four spreading sepals and four unopened petals which form a small ball in the center.

The dried buds of *S. aromaticum* were marketed and used for the preparation of ethanolic extract.

#### **Preparation of Ethanolic Extract**

Plant extract was prepared by the method of Alade and Irobi (1993) with minor modifications suggested by Ahmad and Beg (2001). The buds were grinded to fine powder with the help of mixer grinder and obtained the fine powder by using the muslin cloth as sieve. Then these powdered materials were used for preparation of ethanolic extracts by using 25g powder mashed in 100 ml absolute ethanol for 72 hours. The mixture was stirred every 24 hour using a sterile glass rod. At the end of extraction, the extract was filtered and the filtrate was evaporated at 500C and paste form extract was stored at 40C until further use.

#### **Sample and standard preparation**

**1. Sample preparation:** Three samples ( 2.5 , 5 and 10 mg/ml ) of ethanolic bud extract of *S.aromaticum* were prepared and used as test concentrations.

**2. Standard used for the activity:** Albendazole solution having strength of 20 mg/ml was prepared and used as standard.

#### **EVALUATION OF ANTHELMINTIC ACTIVITY**

The assay was performed invitro using adult earthworm (*P. posthuma*) owing to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings for preliminary evaluation of anthelmintic activity of ethanolic bud extract of *S.aromaticum*. Test samples were prepared at concentrations 2.5 mg/ml , 5 mg/ml and 10 mg/ml in distilled water. Three worms of approximately 5-7 cm length were selected for the experimentation. They were first washed with distilled water and placed in petridish containing 20 ml each of the above three test solutions. Albendazole (20 mg/ml) was used as reference standard and distilled water as control. All the test solutions and standard drug solution were prepared freshly before starting the experiments. Observations were made for the time taken for paralysis and the death of worms. The time for paralysis of worms was noted at different time interval when less or no movement was noticed. The time for death of worms was noted when no movement of worms was noticed even when they were shaken vigoursly or showed no response to the any stimuli (Physical or chemical). The results are shown in the observation table No1

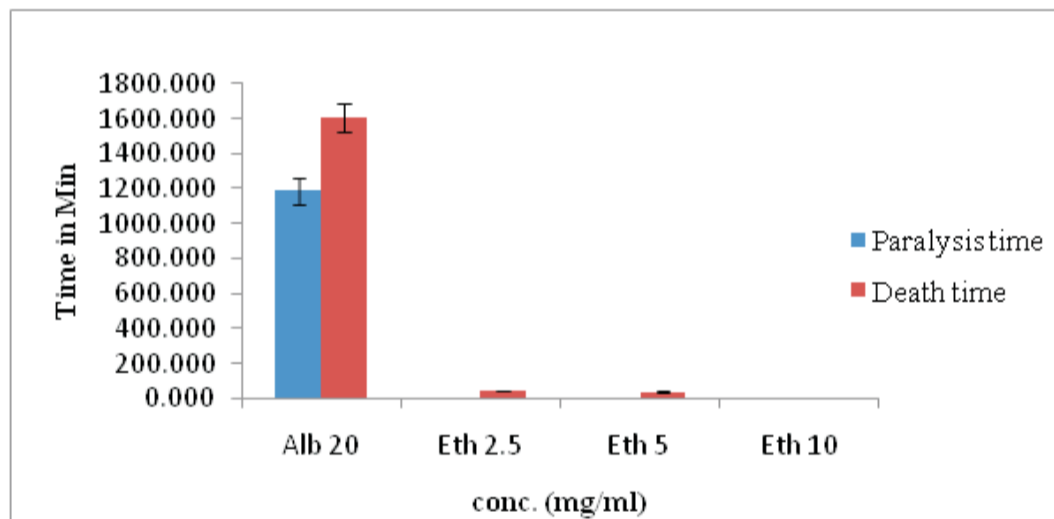


(Plate- I: Fig.1. Dried *Syzygium aromaticum* bud, Fig.2. Earthworm (*P. posthuma*) Fig.3. Ethanolic bud extract of *S. aromaticum*)

**RESULTS AND DISCUSSION**

**Observation Table No.1 Anthelmintic Activity of Ethanolic Bud Extract of *S. Aromaticum***

Sr. No.	Extracts	Concentration (mg/ml)	<i>Pheretima posthuma</i>	
			Paralysis (P)	Death (D)
1.	Albendazole (Standard)	20	1185.33 ± 79.02	1608.33 ± 78.57
2.	Distilled water (Control)	--	--	--
3.	Ethanolic buds extract of <i>S.aromaticum</i>	2.5	4.267 ± 0.252	45 ± 2.00
		5	1.433 ± 0.306	35 ± 4.35
		10	1.033 ± 0.551	2.333 ± 0.351



**Fig : Histogram showing anthelmintic activity of standard and test extract activity of ethanolic bud extract of *S. Aromaticum***

The results obtained in the present investigation indicated that the ethanolic crude extract of *S.aromaticum* buds produced dose dependent paralysis ranging from loss of motility to loss of response to external stimuli which eventually progressed to death. In case of three crude test samples (2.5 ,5 and 10 mg/ml conc.) paralysis was evident at 4.267 ± 0.252 , 2.433 ± 0.306 and 1.033 ± 0.551 minutes while death occurred within 45 ± 2.00 , 35 ± 4.35 and 2.333 ± 0.351 minutes respectively as compared to Albendazole (20 mg/ml conc.) where paralysis was evident at 1185.33 ± 79.02 while death was noticed at 1608.33 ± 78.57 minutes respectively. These finding clearly indicated that though crude samples of ethanolic extract of *S.aromaticum* buds showed significant anthelmintic activity in a dose dependent manner it was more significant at higher concentration which can be evident from haemorrhagic and necrotic spots observed externally on the body of worms exposed to higher concentration (10 mg/ml) and much earlier paralysis and death as compared to other test samples and the standard. Lokesh et al.(2012) stated that the predominant effect of albendazole on the worm is to cause a flaccid paralysis that result in the worm by peristalsis. Piperazine citrate by increasing chloride ion conductance of worm muscle membrane

produces hyperpolarisation and relaxation and flaccid paralysis (Martin R.J.(1985). Lakshmi et al.(2012) investigated anthelmintic activity of *Carica papaya* latex. According to them papaya latex contains many biological active compounds having anthelmintic activity. Though the phytochemical analysis of *S.aromaticum* buds have not been done in the present investigation it is proposed that it may also contained such an active ingredient having anthelmintic action.

## CONCLUSION

In the light of the results obtained in the present investigation and points of discussion it is concluded that the crude ethanolic extract of *S.aromaticum* buds may have such an active ingredients that may paralyse and kill the earthworms. Hence, it can also be used against helminthes infection in human beings and other animals. Future scope however, involves phytochemical analysis and isolation of phytoconstituents of *S.aromaticum* responsible for anthelmintic activity.

## ACKNOWLEDGEMENTS

Authors are thankful to Head P. G. Department of Zoology and Principal of Sadguru Gadage Maharaj, college, Karad for providing laboratory and other infrastructural facilities.

## REFERENCES

- 1.Ahmad, I. and Beg, A. Z. (2001). Antimicrobial and phytochemical studies on 45 Indian medicinal plants against multi-drug resistant human pathogens. *J. of Enth.*, 74: 113-123.
- 2.Akhtar, M. S., Zafar, I., Khan, M. N. and Lateef, M. (2000). *Small Ruminants Res*, 99-107.
- 3.Alade, P. I. and Irobi, O. N. (1993). Antimicrobial activity of crud leaf extracts of *Acalypha wilkkinsina*. *J. Ethano.*, 39: 170-174.
- 4.Banerjee, S. and Das, S.(2005). Anticarcinogenic effect of aqueous infusion of clove on skin carcinogenesis. *Asian Pacific J Cancer Perv* 6, 304-308
- 5.Bhardwaj, L. K., Chandrul, K. K. and Patil., K. S. (2012). Invitro Anthelmintic Activity of *Ficus benghalensis* Linn. Leaves Extracts. *Asian Journal of Pharmmaceutical and Clinical Research*
- 6.Chopra, R. N., Nayyar, S. L. and Chopra, I. C.(1956). *Glossary of Medicinal Plants*. Council of Scientific and Industrial Research, New Delhi, 160.
- 7.Iqbal, Z., Lateef, M., Ashraf, M and Jabbar, A. (2004). *Journal of ethanopharmacology*, 265-268.
- 8.Kadam, J. S., Methe, K. N., Kasabe, S. V. and Kanase, A. A. (2009). Anti- Inflammatory Role of *Syzygium aromaticum*, *Int. J. Pharmacol. Biol. Sci* Vol.3
- 9.Kanthal, L. K., Mandal, P., Satyavathi, K. (2012). Evaluation of Anthelmintic Activity of *Carica papaya* latex using *Pheritima posthuma*. *Int.J. of Life Science and Pharma Research.*, Vol 2
- 10.Lewis, W, H. and Lewis, E. (1977). *Medicinal Botany Plants Affecting Mans health*. John Wiley and Sons, New York,.
- 11.Mahadik, K. R., Kuchekar. and Deshmukh, K. R.(1998). *Concise Organic Pharmaceutical Chemistry*, Nirali Prakashan, 19, p.81.
- 12.Nadkarni, A. K. (1954). *Indian Materia Medica*, Bombay popular book depot, India, 181.
- 13.Patel, B. V.(2001). *A Report of The Seminar on , Herbal Drugs : Present Status and Future Prospectus ,* Perd Centre, Ahmeddabad.
- 14.Pinto, E., Vale-silva, L., Cavaleiro, C. and Salgueoro, L. (2009). Antifungal activity of the clove essential oil from *Syzygium aromaticum* on *Candida aspergillus* and dermatophyte Species. *J Med Microbiol* 58, 1454-1462.
- 15.Said, M. (1969). *Hamdard Pharmacopoea of Eastern Medicine*. Hamdard National Foundation, Karachi, Pakistan,.
- 16.Satyavati, G. V., Raina, M. K., Sharma, M. (1976). *Medicinal Plants of Indian* Council of Med. Res , New Delhi, 201.
- 17.Shrivastava K. C. (1993). Antiplatelet principles from a food spice clove (*Syzygium aromaticum* L). *J Prostaglandins Leukot Essent Fatty Acids* , 49 (5) , 888.
- 18.Tripathi, K. D. (2003). *Essentials of medicinal Pharmacology*, 5th Edition, Jaypee brothers medical publishers (P) LTD. p 759.
- 19.Vaanwyk, B. E. (2009). *Micheal Wink. Medicinal plant of The World*. Published by Briz Publication , South Africa, Ed. I (7) ,43.



**R. N. Patil**

P.G.Dept. of Zoology, Sadguru Gadage Maharaj College, Karad (M.S.)



# Publish Research Article International Level Multidisciplinary Research Journal For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper, Summary of Research Project, Theses, Books and Book Review for publication, you will be pleased to know that our journals are

## Associated and Indexed, India

- \* International Scientific Journal Consortium
- \* OPEN J-GATE

## Associated and Indexed, USA

- EBSCO
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Database
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Golden Research Thoughts  
258/34 Raviwar Peth Solapur-413005, Maharashtra  
Contact-9595359435  
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com  
Website : www.aygrt.isrj.net