

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

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.

Regional Editor

Manichander Thammishetty

Ph.d Research Scholar, Faculty of Education IASE, Osmania University, Hyderabad

International Advisory Board

Kamani Perera

Regional Center For Strategic Studies, Sri Lanka

Mohammad Hailat

Dept. of Mathematical Sciences, University of South Carolina Aiken

Hasan Bakfir

English Language and Literature Department, Kayseri

Janaki Sinnasamy

Librarian, University of Malaya

Abdullah Sabbagh

Engineering Studies, Sydney

Ghayoor Abbas Chotana

Dept of Chemistry, Lahore University of Management Sciences[PK]

Romona Mihaila

Spiru Haret University, Romania

Ecaterina Patrascu

Spiru Haret University, Bucharest

Anna Maria Constantinovici

AL. I. Cuza University, 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 Ex - VC. Solapur University, Solapur

Iresh Swami

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. Yalikal

Director Management 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

G. P. Patankar

S. D. M. Degree College, Honavar, Karnataka

Alka Darshan Shrivastava

Shaskiya Snatkottar Mahavidyalaya, Dhar

Chakane Sanjay Dnyaneshwar

Arts, Science & Commerce College, Indapur, Pune

Maj. S. Bakhtiar Choudhary

Director, Hyderabad AP India.

Rahul Shriram Sudke

Devi Ahilya Vishwavidyalaya, Indore

Awadhesh Kumar Shirotriya

Secretary, Play India Play, Meerut (U.P.)

S. Parvathi Devi

Ph.D.-University of Allahabad

S.KANNAN

Annamalai University, TN

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.org



RESPONSE OF CATALASE ENZYME TO PHOSPHAMIDON TREATMENT

V. S. Shirashyad

Walchand College of Arts and Science, Solapur .

ABSTRACT

Effect of Phosphamidon (Organophosphorus Pesticide) on the catalase enzyme activity has been studied in the germinating seeds of bean, okra, gaur and onion. Phosphamidon treatments except 0.015% have shown stimulatory effect in all the vegetable seeds studied, but onion has shown least enhancement in the catalase activity. The enhanced activity of enzyme catalase activity might be due to increased rate of respiration.

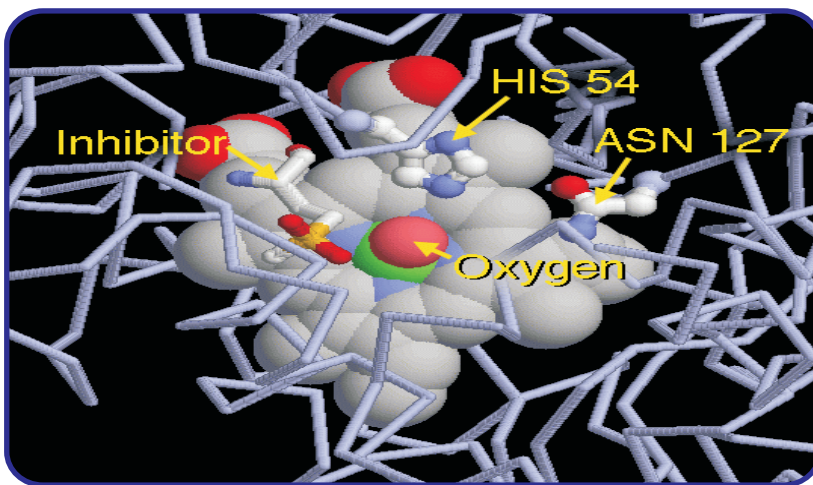
KEYWORDS: Phosphamidon, organo phosphorus pesticide, catalase, bean, okra, guar, onion.

INTRODUCTION

Now a days pesticides are extensively used in developing countries, their adverse effects are also of the growing concern today (Tatekar et al., 1977). The effect of pesticides on the germinating seeds are relatively few (Guha et al., 1987). In order to understand the plant-pesticide relationships the present investigation has been undertaken.

Material and Methods:

Seeds of *Atlium cepa* L. (onion), *Abelmoschus esculentus* Moenah L. (okra), *Phaseolus vulgaris* L. (bean) and *eyamopsis tetragonolobus* L. (guar) after sterilization allowed to germinate on



filter paper in dark in an incubator at 30°C in petriplates containing 10 ml solution of Methylparathion (0.01, 0.02, 0.03 & 0.04% v/v). For controls distilled water was used. The enzyme catalase (EC 1.11.1.6) activity was assayed in seedlings after 72h germination by the modified method of Herbert (1955).

RESULT AND DISCUSSION:

In the cells the H_2O_2 is converted into H_2O and O_2 by catalase enzyme. Thus catalase plays an important role in protecting the cells against oxidative stress as a sink for H_2O_2 and is indispensable for

RESPONSE OF CATALASE ENZYME TO PHOSPHAMIDON TREATMENT

stress defence (Willekens et al., 1997).

The activity of enzyme Catalase in general was found to be increased at lower concentrations but was decreased as the concentration of phosphamidon increased. In okra all concentrations of phosphamidon except 0.015% have shown stimulatory effect. Onion has shown marginal or no increase in catalase activity over control. In bean seedlings the activity of catalase has increased. On the other hand there was no consistency in level of catalase in guar. Thus the stimulation of this enzyme by phosphamidon in bean, okra and guar might be due to increased rate of respiration.

From the present investigation it is clear that, phosphamidon treatments in bean led to an increase in the catalase activity, which might be an adaptive feature. However there was a little or no change in the activity of catalase in onion treated with phosphamidon. A decrease in the activity of catalase at higher concentrations may be attributed to the inhibition caused by pesticide treatment on the production of the enzyme catalase in the seedlings.

REFERENCES

1. Guha, P., M. K. Ray, M. Santra, A. Mitra and G. C. Chatterjee (1987) : Effect of Dimethoate on total soluble nucleotide, deoxyribonuclease and ribonuclease in the *Vigna sinensis* L. seeds during germination. *Indian J. Pl. Physiol.*, 30(1) : 20-25.
2. Herbert, D. (1955) : Catalase from bacteria. In : *Methods in enzymology*, vol. II Colowick, S. P. and N.O. Kalpan (Eds.) Academic Press, Inc. Publishers, New York, pp: 784-786.
3. Tatekar, N. S., L. T. Sun, E. M, Lec, J. H. Chen, T. M. Lee and S. Lu (1977) : Residual behaviour of several insecticides of Chinese cabbage. *J. Econ. Entomol.*, 70 : 689-694.
4. Willekens, H., C. Sangpon, M. Davey, M. Schrunder, C. Longerbartles, M. Van Montagu, D. Inze and W. Van Conp (1997) : Catalase in sink for H₂O² and is indispensable for stress defense in C-3 plants. *The EMBO Journal*, 16(16): 4806-4816.

Effect of Phosphamidon on the activity of enzyme catalase in bean, okra, guar and onion seedlings after 72 h germination.

Phosphamidon % (v/v)	Catalase (mg H ₂ O ₂ min ⁻¹ mg ⁻¹ protein)			
	Bean	Okra	Gaur	Onion
Control	0.595	21.94	81.42	2.17
	0.036	0.014	0.462	0.005
0.005	0.85 ***	35.41***	59.99***	2.15 ns
	0.07	0.03	1.313	0.01
0.010	1.3***	30.91***	89.88***	2.15 ns
	0.013	0.011	0.471	0.07
0.015	0.79***	21.33***	52.45***	2.07*
	0.036	0.035	1.129	0.013
0.020	0.72**	33.59***	45.43***	2.11 ns
	0.003	0.361	0.916	0.013

RESPONSE OF CATALASE ENZYME TO PHOSPHAMIDON TREATMENT

Test of significance

*** - $p < 0.001$ - Extremely significant

** - $p < 0.01$ - Very significant

* - $p < 0.005$ - Significant

ns - Non Significant

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.org