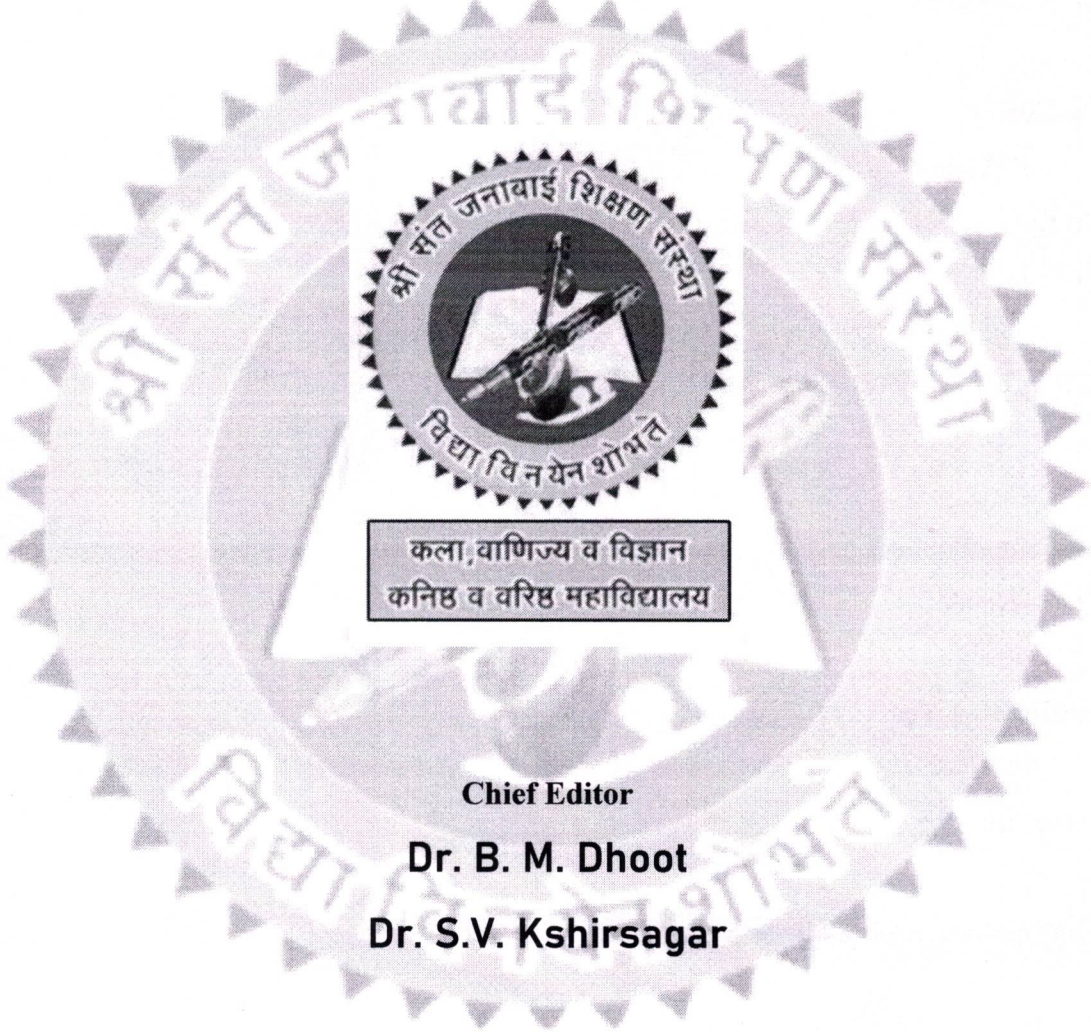


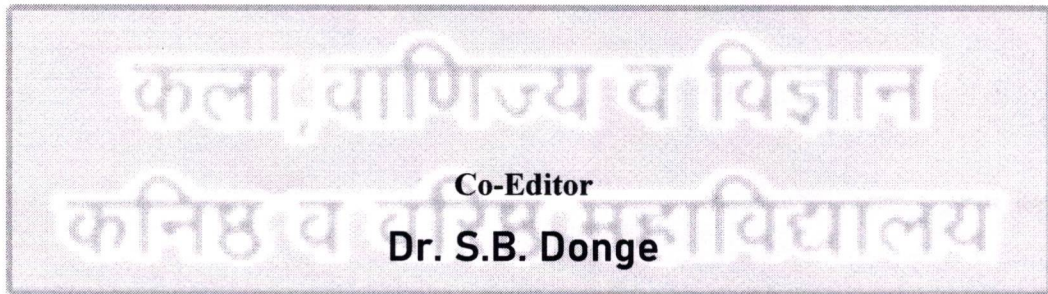
Trends in Commerce, Economics & Life Sciencess



Chief Editor

Dr. B. M. Dhoot

Dr. S.V. Kshirsagar



Co-Editor

Dr. S.B. Donge

Dr. G.A. Bhurke

Dr. S.U. Kalme

Trends in Commerce, Economics & Life Sciencess

Chief Editor

Dr. B. M. Dhoot

Dr. S.V. Kshirsagar

Co-Editor

Dr. S.B. Donge

Dr. G.A. Bhurke

Dr. S.U. Kalme

ISBN No. 978-93-83995-60-9

Published by:

Anuradha Publications

Cidco-Nanded

Publication Year: 2021-22

Price- Rs. 190/-

Copyright © ACS College, Gangakhed

Printed by

Gurukrupa Offset,

Near Police Station, Gangakhed

Typesetting by:

Simran Computers

Gangakhed Dist.Parbhani

Cover Designby:

Mr. Imran K. Mohammad

CONTENTS

| Sr. No. | Content |
|---------|--|
| 01 | Black Money and its Disastrous Influence on Indian Economy |
| 02 | Obstacles and the Importance of Commerce Education |
| 03 | To Study the Leaf Extract of Some Medicinal Wild Plants on Growth of Macrophomina Phaseolina (Tassigoid) Causing Root Rot Disease of Sarpagandha |
| 04 | A Review of New Challenges in Internet Banking and Its Benefit |
| 05 | Studies on Growth of Macrophomina phaseolina isolated from infected roots of Sarpagandha on Selected Media |
| 06 | Applications and Challenges of Nanotechnology |
| 07 | राष्ट्रीय शैक्षणिक धोरण-२०२०: उच्च शिक्षणाची दशा आणि दिशा |
| 08 | Studies on root rot of Rauwolfia serpentina L. Benth ex Kurz caused by Macrophomina Phaseolina (Tassi) Goid |
| 09 | डॉ.बाबासाहेब आंबेडकर यांचे कामगार विषयक विचार |
| 10 | Commerce Education: Challenges and Solutions |
| 11 | Studies on Rauwolfia tetraphylla Benth. Ex. Kurz. (Sarpagandha) |

कला, वाणिज्य व विज्ञान
कनिष्ठ व वरिष्ठ महाविद्यालय

Studies on root rot of *Rauwolfia serpentina* L. Benth ex Kurz caused by *Macrophomina Phaseolina* (Tassi) Goid

Dr. M.M. Dudhbhate

Dept of Botany, ACS College, Gangakhed.

mmdudhbhate@rediffmail.com

Introduction:

Rauwolfia serpentina Benth.ex Kurz is most important medicinal plant belongs to family Apocynaceae. It is commonly known as Indian snakeroot (serpagandha). Rauwolfia root is one of the important crude drugs used in modern medicine. Its leaves are simple, 7.5 -10 cm long and 3.5 –5 cm broad. The roots are prominent, tuberous, usually branched, 0.5 to 2.6 cm in diameter and up to 40 to 60 cm deep into soil. The root bark constitutes 40-60% of the whole root is rich in alkaloids known for their efficacy in reducing high blood pressure and as a sedative or tranquilizing agent. The fresh roots emit a characteristic acrid aroma and are very bitter in taste. The roots possess high alkaloid concentration. Reserpine is the compound i.e. active principle used for hypertension as a life saving drug in allopathic system of medicine. Roots are mainly collected from forests and various agriculture university gardens (Dey and De, 2010).

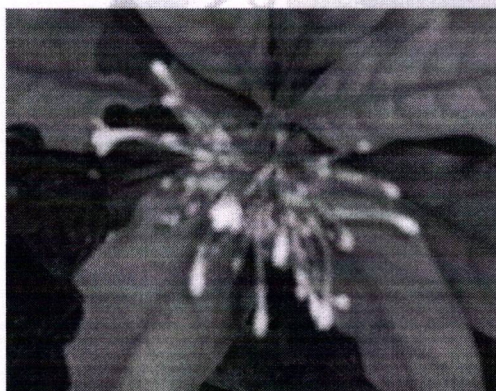


Fig1. *Rauwolfia serpentina* plants

Materials and Method:

Collection of Infected Plant material:

The collection of infected roots of *Rauwolfia serpentina* L. Benth ex Kurz was carried out from different medicinal plant gardens viz. Nagarjun medicinal plant garden, PDKV Akola and MPKV Rahuri (MS). Roots were stored at research laboratory for further study.

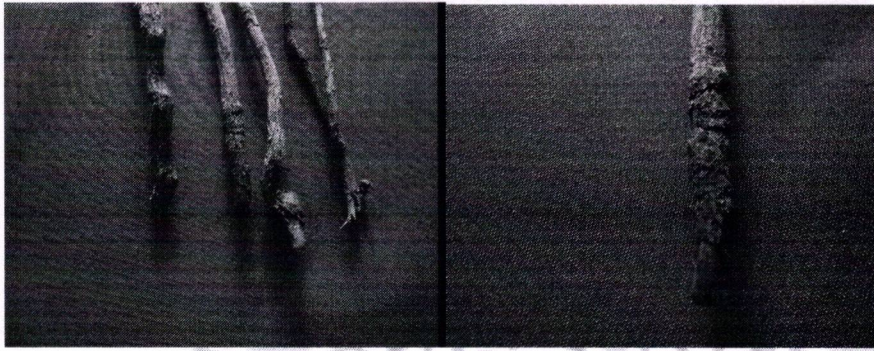


Fig2. Infected roots of Rauwolfia serpentina

Isolation of the pathogen:

The infected roots were collected from two medicinal plant gardens i.e., **Nagarjun medicinal plant garden, PDKV Akola and MPKV Rahuri**. The fungal pathogen *Macrophomina phaseolina* (Tassi) Goid was isolated from the infected roots of **sarpagandha** showing typical root rot symptoms. The healthy and infected roots were brought to laboratory and preserved for further study. The infected roots were sterilized with 1% sodium hypo chloride solution. The sterilized root were used for isolation of fungal pathogen i.e. *Macrophomina phaseolina*. The isolation of pathogen was made by taking small portion of the infected root and inoculated aseptically on Potato Dextrose Agar medium (PDA). The plates were incubated for 7 days at room temperature (Cloud, and Rupe, 1991 and Dhingra et ai.,1977).

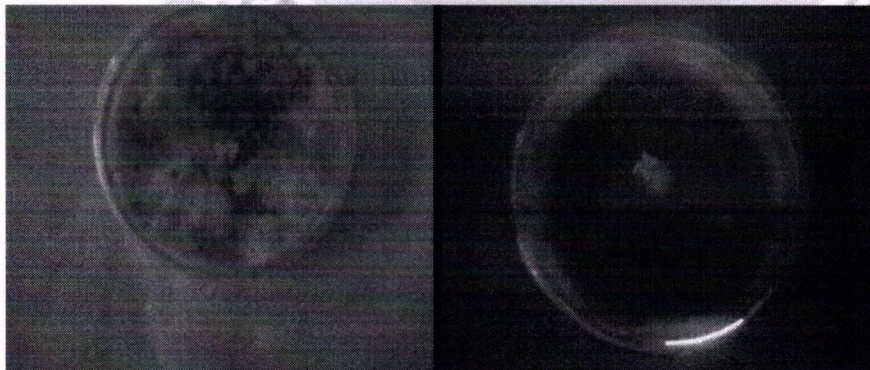


Fig3. Isolation of Macrophomina phaseolina

Purification:

Purification was carried out by single spore isolations technique. Isolated fungal spores were transferred for three times on fresh PDA media to obtain pure culture (Bowers, 1999).

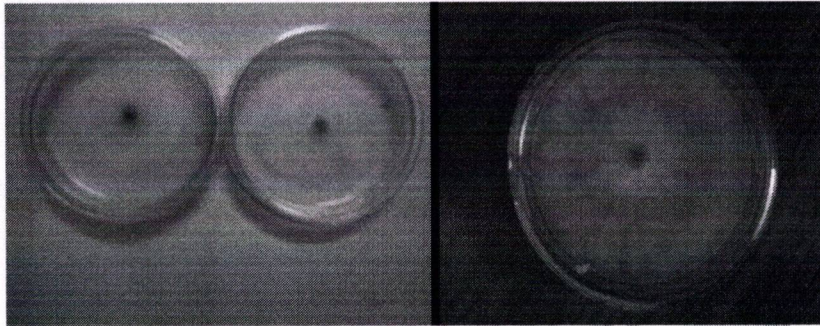


Fig4. Pure culture of *Macrophomina phaseolina*

Identification:

The *Macrophomina phaseolina* was identified on the basis of growth of vegetative and reproductive characters of fungal culture. The mycelium and reproductive structures are described as (White, 1999 and Mukadam et al, 2006). The pure culture of *Macrophomina phaseolina* was sent to Agharkar Research Institute, Pune for identification. They also confirmed that the pure culture was *Macrophomina phaseolina*.

The mycelium is septate and black colored. The conidiophores were formed singly or in groups, straight or flexuous brown to olivaceous brown. The conidia were solitary straight or slightly flexuous oblong or muriform or ellipsoidal tapering to beak, pale or olivaceous brown, length 300 μm and 15 μm thick in the broadest part with 8 transverse and 4 longitudinal septa. The beaks were flexuous, pale and branched. Thus, the pathogen causing root rot of *Rauwolfia serpentina* has been **identified as *Macrophomina phaseolina***.

It was observed that the fungal infection shows black conducting tissues of sarpagandha roots. The isolated fungal pathogen from infected roots showed similar fungal growth on potato dextrose agar (PDA) media.

Pathogenicity test:

Pathogenicity test was carried out by inoculating with spore suspension and homogenized mycelial bits of *Macrophomina phaseolina* (Tassi) Goid on dried roots of *Rauwolfia serpentina*. Five days after inoculation the symptoms appeared on inoculated roots as black spots. Reisolated and purified culture from these artificially infected roots was similar to that of original culture and symptoms were similar to that of infected root. The plants which were not inoculated with the fungal spore suspension did not show any symptoms of the disease.

Acknowledgements:

The authors are very thankful to Principal, D.S.M.College, Parbhani (MS) for providing research facilities at Botany and Biotechnology Dept.

References:

1. Bowers, G. R. and Russin, J. S. 1999. Soybean disease management. *In Soybean production*
2. Cloud, G. L. and Rupe, J. C. 1991. Comparison of three media for enumeration of sclerotia of *Macrophomina phaseolina*. *Plant Disease* 75:771-772.
3. Dey, Abhijit and De, J.N.(2010). *Rauwopfia serpentina* L. Benth ex Kurze-A
4. Dhinga, O. D. and Sinclair, J. B. 1977. An annotated bibliography of *Macrophomina phaseolina*. 1905-1975. Universidade Federal de Vicosa, Minas Gerais, Brazil.
5. in the mid-south. L. G. Heatherly and H. F. Hodges. CRC Press.
6. **Mukadam, D.S, M.S. Patil, A.M. Chavan, Anjali R. Patil; (2006). The illustrations of Fungi. Saraswati Printing Press, Aurangabad.**
7. Review.Asian J.Pl.Sci. 9 (6) : 285298.
8. White, D. G.1999. Fungal stalk rots. Compendium of Corn Diseases 3rd Edition. D. G. White ed. APS Press. St. Paul, MN.

