Chief Editor

Dr. A. Singaraj, M.A., M.Phil., Ph.D.

Editor

Mrs.M.Josephin Immaculate Ruba

EDITORIAL ADVISORS

1. Prof. Dr.Said I.Shalaby, MD,Ph.D.
   Professor & Vice President
   Tropical Medicine,
   Hepatology & Gastroenterology, NRC,
   Academy of Scientific Research and Technology,
   Cairo, Egypt.
2. Dr. Mussie T. Tessema,
   Associate Professor,
   Department of Business Administration,
   Winona State University, MN,
   United States of America,
3. Dr. Mengsteab Tesfayohannes,
   Associate Professor,
   Department of Management,
   Sigmund Weis School of Business,
   Susquehanna University,
   Selinsgrove, PENN,
   United States of America,
4. Dr. Ahmed Sebihi
   Associate Professor
   Islamic Culture and Social Sciences (ICSS),
   Department of General Education (DGE),
   Gulf Medical University (GMU),
   UAE.
5. Dr. Anne Maduka,
   Assistant Professor,
   Department of Economics,
   Anambra State University,
   Igbariam Campus,
   Nigeria.
6. Dr. D.K. Awasthi, M.SC., Ph.D.
   Associate Professor
   Department of Chemistry,
   Sri J.N.P.G. College,
   Charbagh, Lucknow,
   Uttar Pradesh. India
7. Dr. Tirtharaj Bhoi, M.A, Ph.D,
   Assistant Professor,
   School of Social Science,
   University of Jammu,
   Jammu, Jammu & Kashmir, India.
8. Dr. Pradeep Kumar Choudhury,
   Assistant Professor,
   Institute for Studies in Industrial Development,
   An ICSSR Research Institute,
   New Delhi- 110070, India.
9. Dr. Gyanendra Awasthi, M.Sc., Ph.D., NET
   Associate Professor & HOD
   Department of Biochemistry,
   Dolphin (PG) Institute of Biomedical & Natural Sciences,
   Dehradun, Uttarakhand, India.
10. Dr. C. Satapathy,
    Director,
    Amity Humanity Foundation,
    Amity Business School, Bhubaneswar,
    Orissa, India.

ISSN (Online): 2455-7838
SJIF Impact Factor : 6.093

EPRA International Journal of

Research & Development

(IJRD)

Monthly Peer Reviewed & Indexed International Online Journal

Volume: 4, Issue:5, May 2019

Published By
EPRA Publishing

CC License

BY NC ND

SJIF Impact Factor: 6.093 Volume: 4 | Issue: 5 | May| 2019 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Peer Reviewed Journal

THE SPREAD OF ENTOMOPATHOGENIC FUNGI IN GREENHOUSES OF TASHKENT REGION

Ablazova Mokhichehra Mirakbarovna
Independent Researcher, Assistant of Plant Protection Department, Tashkent State Agrarian University, Tashkent, Uzbekistan

Zuparova Dilobar Mirakbarovna
Scientific Researcher, Center of Genomics and Bioinformatics, *Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan*

ABSTRACT
The article provides information about entomopathogenic fungi that parasitize insect pests. 32 species of entomopathogenic fungi were isolated from greenhouses in three territories of the Tashkent region. In the samples of dead sucking pests Paecilomyces varioti fungus type was most frequently found, Beauveria bassiana, Entomophtora thaxteriana, Scopulariopsis brevicaulis types were mostly met.
KEYWORDS: *entomopathogenic fungi, sucking pests, Paecilomyces varioti, Beauveria bassiana,*

INTRODUCTION

Entomopathogenic fungi are a group of heterotrophic microorganism that parasitize in insects and develop depending on them [2]. The data about entomopathogenic fungi was analyzed thoroughly in the works of A.A.Yevlakhova (1974), E.Z.Koval (1974) and N.Yu.Geshtaut (2002).

Infectious diseases of insects that are caused by virus, bacteria and fungi have already been defined at the beginning of XVII century. The first data about fungus epizooty was presented in 1734. Etiological role of fungi in insect diseases was studied later. Microorganisms caused diseases of harmful insects were firstly identified in 1879 by I.I.Mechnikov [1].

As it was stated in references, specific parasitism of entomopathogenic fungi in harmful insects is divided into biotroph, facultative and necrotrophic species [1, 2, 3].

Biotroph type development of entomopathogenic fungi – is a development by using host organism as a source of feed. When obligate parasites infect sucking insects they penetrate into host body and develop in its live tissue, they infect insect's necessary internal body parts that can lead to dying. After that, vegetative growth of fungi stops and reproductive development starts, that is, spore-bearing period begins.

Spores damage new insects and continue pathogen biotroph development. If microorganism cannot find host pest, then it forms spore for dormancy.

Facultative parasites also penetrate into sucking insects and infect them, use internal organism of host as a source of food then kill the host with metabolits. When the host organism nutrient finishes the microorganism undergoes next stage – spore-bearing stage. Spores, in their turn, infect new insects and continue pathogen development. If facultative parasites don't meet with insects they survive in soil and plant residues in the form of necrotrophic, continue to live or pass to dormancy period.

Necrotrophic type development of entomopathogenic fungi – is a development in a dead tissue by penetrating into dead host organism through its pellicle. When the host organism nutrient finishes the microorganism undergoes next stage – spore-bearing stage. These spores, in their turn, infect new insects and continue pathogen development. Parasite fungus infect the host organism and continue necrotrophic life. If the spores don't meet with insects they survive in soil and

plant residues, continue to live or pass to dormancy period (Geshtaut, 2002).

MATERIALS AND METHODS

Dead samples of sucking insects collected from greenhouses have been used as experimental materials.

With wet filter paper spread and beer wort nutrient medium, potato nutrient medium and starvation agar nutrient medium placed Petri plates have been used for isolating fungi from samples. These agar nutrient media *pH* value was 6,5-6,7. Infected insect samples were sown in moisture camera and nutrient media under sterile condition. Petri plates with moisture camera and nutrient media were placed in 24-20°C degree thermostat for the germination of fungi in insect samples and observed during 15 days from the third day after the sowing.

The fungi germinated in insect samples were inoculated one by one in testing tubes with beer wort nutrient medium and these tubes were placed in thermostat with 24-26°C degree for the growth of fungi.

The species of fungi germinated in testing tubes were identified with determiners.

RESULTS AND DISCUSSION

The fungi of 32 species were isolated from the collected samples of dead sucking pests of vegetable crops by disease which are spread in greenhouses of Kibray, Tashkent, Zangiota and Urta Chirchik district of Tashkent region (Table-1).

When the inter-relations between host insect and the fungi that were isolated in the experiments have been analyzed on the base of references [1, 3], *Aspergillus flavus, A.niger, A.ochraceus, A.oryzae, Beauveria bassiana, Cephalosporium acremonium, Entomophtora coronata, E.thaxteriana, E.virulenta, Fusarium lateritium, F.sambucinum, Mucor hiemalis, Paecilomyces javanicus, P. varioti, Rhizopus nigricans, Scopulariopsis brevicaulis, Stachybotrys alternans* were found to be biotroph type isolated from sucking pests, *Alternaria alternata, Aspergillus candidus, A.fischeri, A.insultus, A.repens, Cladosporium herbarum, Penicillium chrysogenum, P.citrinum, P.lanoso-coeruleum, P.nigricans, P.notatum, P. purpurogenum, P. terrestre, Stachybotrys alternans, Trichoderma viride, Verticillium lateritium* were known to be necrotrophic species.

Table-1
Fungi types isolated from the samples of dead sucking pests in greenhouses

№	Isolated fungi		Fungi type frequency
	Genus	species	
1	2	3	4
1	*Alternaria* Nees	*A.alternata* (Tr.) Keissl	+
2	*Aspergillus* Micheli	*A. candidus* Lk	+
		A.fischeri Wehm.	++
		A. flavus Lk	+
		A.insultus Bain.	+
		A.niger V.Tiegh	++
		A. ochraceus With.	+
		A. oryzae Cohn.	+
		A.repens Sacc.	+
3	*Beauveria* Vuill.	*B.bassiana* (Bals.) Vuill.	++++
4	*Cephalosporium* Cda	*C.acremonium* Cda	++
5	*Cladosporium* Lk	*C.herbarum* (Pers.) Lk	+
6	*Entomophtora* Tres.	*E.thaxteriana* (Petch) Hall et Bell	++++
		E. coronata (Cost.) Kevork.	+++
		E. virulenta Hall et Dunn	+++
1	2	3	4
7	*Fusarium* Lk	*F.lateritium* Nees.	+
		F. sambucinum Fuck.	+
8	*Mucor* Much.	*M. hiemalis* Wehm.	+
9	*Paecilomyces* Bain.	*P.javanicus* Brown et Smith	+++
		P. varioti Bain.	+++++
10	*Penicillium* Lk	*P.chrysogenum* Thom	+
		P. citrinum Thom	+
		Penicillium lanoso-coeruleum Thom	+
		P. nigricans Bain.	++

		P.notatum Westl.	+
		P. purpurogenum Tler. Et Stoll	+
		P. terrestre Jens.	+
11	*Rhizopus* Ehrenb	*R.nigricans* Ehr	++
12	*Scopulariopsis* Bain	*S.brevicaulis* (Sacc.) Bain.	++++
13	*Stachybotrys* Cda	*S. alternans* Bon.	+
14	*Trichoderma* Pers. ex Tr.	*T. viride* Pers.	++
15	*Verticillium* Nees	*V. lateritium* Berk.	+

***Comments**: + - the least frequent; ++ - less frequent; +++ - mean frequent; ++++ - much frequent; +++++ - the most frequent fungus types.*

In the samples of dead sucking pests *Paecilomyces varioti* fungus species was most frequently found, *Beauveria bassiana*, *Entomophtora thaxteriana*, *Scopulariopsis brevicaulis* species were mostly met. It was defined that *Entomophtora coronata, E.virulenta, Paecilomyces javanicus* species had average frequency. It was noted that other isolated fungi species were found less.

CONCLUSION

The fungi separated from the dead samples of sucking insects of greenhouses can be classified into the following groups according to scientific references data: ectoparasites (external) which parasite in body surface of the pests are A*spergillus, Cephalosporium, Fusarium, Mucor, Penicillium, Rhizopus* group representatives and endoparasites (internal) which parasite internal tissue of host are *Beauveria, Entomophtora, Scopulariopsis* group fungi.

In the results of the research it was determined that the fungi which belong to various systematic groups may cause to diseases of sucking insects of greenhouses.

REFERENCES

1. *Evlakhova A.A. Entomopathogen fungi.-Leningrad: Nauka, 1974. -260 p. (in Russian)*
2. *Geshtaut N.Y. Entomopathogenic fungi (Biotechnological aspects). –Almata, 2002. 288 p. (in Russian)*
3. *Koval E.Z. Determiner of entomophillous fungi USSR. - Kiev: Naukova Dumka,1974. -260 p. (in Russian)*