Isolation and Identification of Soil Fungi from Kadegaon Tehsil, Sangli District, Maharashtra, India.

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ABSTRACT:-

The investigation was conducted to find out the fungal diversity in soil sample collected from Kadegaon tehsil, Dist- Sangli. During investigation 18 isolates of fungi obtained from the soil samples. Among the 18 isolates 16 were identified with standard key & microbial expert. From the fungal isolates the most of the species belonging to genera *Aspergillus*

KEY WORDS:-

Soil fungi,

Microbial pathogen,

Isolation,

I. INTRODUCTION:-

The soil serves as a reservoir for many microbial communities of plant and herbs which can be producing, Co2 nitrogen cycle. The microorganisms plays major role in soil ecosystem. (Stefanis et al. 2013) soil is an oligotrophic medium for the growth of fungi because the fungal growths are extremely limited for most of the time & readily available are present for short periods in a limited zone. For most of the time fungi are either dormant, or they metabolize and grow very slowly utilizing a range of organic molecules. The fungi distribute organic matter away from the roots. Genetic studies have shown that fungi are more closely related to animals than to plants. Fungi have 80% or more of the same genes as humans. Ratna kumar et al. 2015; Dick 2009 & Krick 2004.Fungi are not only beautiful but play a significant role in the daily life of human beings besides their utilization in industry, agriculture medicine, food industry, textiles, bioremediation ,natural cycling, as bio fertilizers and many other ways. Fungal biotechnology has become an integral part human welfare (Karthikeyan et al, 2014. Fungus protects plants by supplying a protective health to supply both water & Phosphorus to the plant roots during droughts (Magdoff and VanEs, 2009) The present studies were identified fungal community from soil samples collected from Kadegaon tehsil

II. MATERIAL AND METHODS:-

A. COLLECTION SITES:-

Soil sample were collected near plant roots. Soil samples (Approximately 5g) were collected with clean dry and sterile polythene bags along with sterile spatula. The collected brought to the laboratory and preserved for further studies. The soil samples were collected from the month of August 2017 in Kadegaon tehsil.

B. PREPARATION OF SOIL SAMPLE AND MICROBIAL CULTURE:-

In systematic screening process for isolation of fungus soil samples collected at different locations inside the Kadegaon tehsil. Samples were collected near roots were most of the microbial activity is concentrated. From the collected soil samples (soil dilution method; Waksman, 1927) diluted with 1 gm soil in 10 ml of sterile distilled water. 1ml suspension was added to sterile petriplates in triplicates containing sterile Potato Dextrose Agar the plates were incubated at 28 Degree C For5-7 days. A greater number of species was isolated most of the fungus sporulate heavily. Pure culture done using test tube containing fresh agar slants of PDA medium. The test tubes are stored in refrigerator. When inoculums were transferred into petriplates containing nutrient media cells are not separated from each other. Therefore,

there develop mixed colonies. Hence isolation of pure culture from mixed colonies is rather difficult therefore spread plate technique is employed for pure culture.

C. IDENTIFICATION OF FUNGI:-

The isolated were identified to the genus level and to the species when possible on the basis of macro morphological (the colonies were examined for slow or for rapid growth, topography (Flat, heaped, regularly or irregularly folded), texture (east like, powdery, granular, velvety or cottony), surface pigmentation and reverse pigmentation and micro morphological (Hyphae, macro conidia, chlamydospores and other special fungal structure) characteristics using suitable media, slide culture and the most updated keys for identification. The identified fungi confirmed with microbial expert. And also with the help of standard book Illustration of Fungi by classification system.

III. RESULTS AND DISCUSSION:-

The study aimed that the isolation of soil fungi from Kadegaon tehsil grown in vitro during the period of August 2017. Isolated fungi was identified by some key with help of standard books. During investigation 18 isolates obtained from the soil samples. 16 were identified with standard key and microbial expert. From the fungal isolates the most of the species belonging the genera *Aspergillus* were dominant.

Soil is a multi-layered surface complex of mineral and organic constituents present in solid liquid and gaseous states. The mineral portion of soil results from the actions of Weathering and erosion on rock (Dannis, 2012). Broad soil type and, slit or clay is defined as largest to smallest of particle size. These particles pack loosely, and pour spaces, and plant roots are particular habitats for microorganisms, often in bio films. Soil also contains plants, animal carcasses and manmade materials.

A gram of garden soil can contain around 1 million fungi such as yeasts, and moulds fungi have no chlorophyll and are not able to photosynthesis. They can no use atmospheric carbon dioxide as a source of carbon; they are chemo heterotrophic meaning that, like animals. They require a chemical source of energy rather than being able to use light as an energy source as well as organic substrates to gate carbon for growth and development. Many fungi are parasitic, often causing disease to their living host plant although some have beneficial with plants. Where ever adequate moisture, temperature and organic substrates are available fungi are present. Diversity of most groups of fungi tends to increase in tropical regions, but detailed studies are only in their infancy (Issac et al, 1993) from the mycelia the fungi is able to throw its fruiting, the visible part above the soils (e.g. Mushrooms, toad stools, puffballs), which may contain millions of spores.

Present study carried out for an effort to understand the soil fungal diversity in Kadegaon tehsil. The environmental, moisture, organic carbon an nitrogen play an important role in distribution of mycoflora. The soil moisture has a direct effect on the population of fungi positively hence, at higher moisture the tolerance and colonization is badly affected. (Adams et al, 1999) Several reviews exist of recent, successful techniques for isolating fungi from nature (Labeda, 1992). (Seifert, 1992) includes basic techniques for isolating specific taxonomic groups and from specific habitat and (Bacon 1992) in discussing the endophytic fungi of grasses, includes techniques that cloud be apply to other substrates. As above Bills and (Polishook 1994) have demonstrated the value of particle filteration for the isolation of diverse fungi.

TABLE:- THE COLONY MORPHOLOGY OF DIFFERENT SPECIES ISOLATED FROM DIFFERENT LOCATION IN KADEGAON TEHSIL.

Area	Sr. No	Size	Colour	Nature of Hyphae	Conidia Shape	Name Of the species
Sagreshwar Abhayarnya area soil	1	Medium	Black	Non-Septate	Rough,Irregular	*Aspergillus niger*
	2	Small	Gray-Green	Non-Septate	Irregular	*Aspergillus fumigates*
	3	Medium	Blue-Green	Non-Septate	Oval	*Penicillium Crysogenum*
Dongrai – Kadegaon area soil sample	4	Medium	Black	Non-Septate	Rough,Irregular	*Aspergillus Niger*
	5	Large	Green	Non-Septate	Globose	*Aspergillus Clavatus*
	6	Medium	Blue-Green	Non-Septate	Oval	*Penicillium Crysogenum*
	7	Small	Black	Non-Septate	Oval	*Rhizopus Stolonifer*
Amrapur area soil sample	8	Medium	Black	Non-Septate	Rough,Irregular	*Aspergillus Niger*
	9	Medium	Brown	Non-Septate	Globose	*Rhizopus Oryzae*
Sugar factory-wangi area soil sample	10	Medium	Black	Non-Septate	Irregular	*Aspergillus Sydowii*
	11	Medium	Black	Non-Septate	Rough,Irregular	*Aspergillus Niger*
Chauranginath-Sonsal area soil sample	12	Medium	Blue-Green	Non-Septate	Oval	*Penicillium Crysogenum*
	13	Medium	White	Non-Septate	Ellipsoidal	*Mucor spp*
	14	Small	Black	Non-Septate	Oval	*Rhizopus Stolonifer*
Nerli area soil sample	15	Medium	Black	Non-Septate	Rough,Irregular	*Aspergillus niger*
	16	Small	Gray-Green	Non-Septate	Irregular	*Aspergillus Fumigates*

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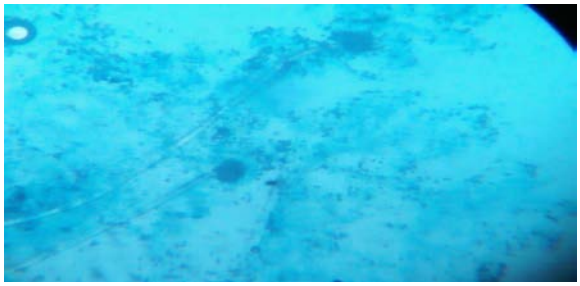
PHOTO PLATES:-



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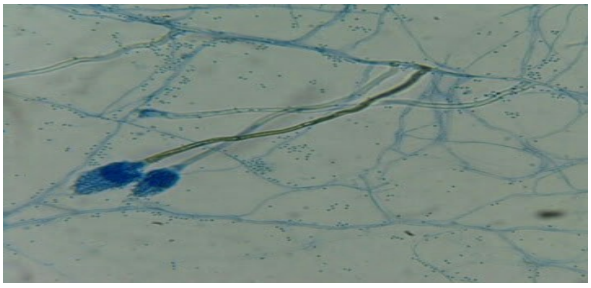

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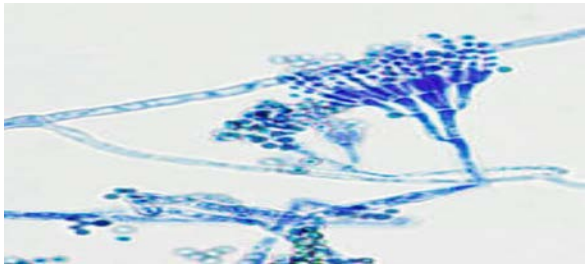

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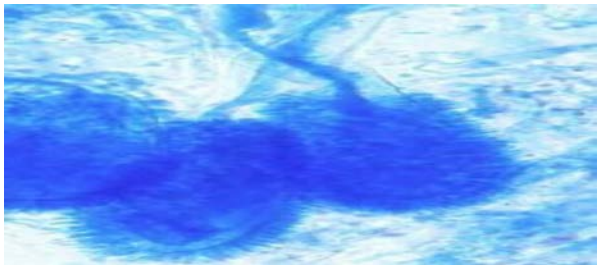

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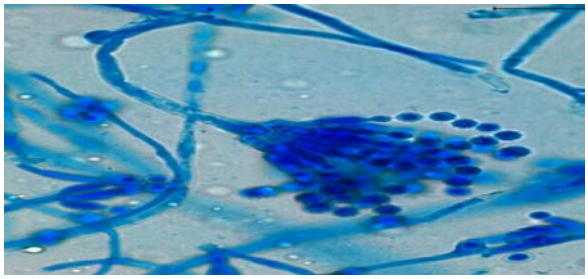
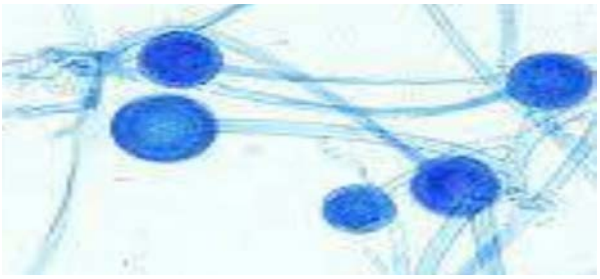
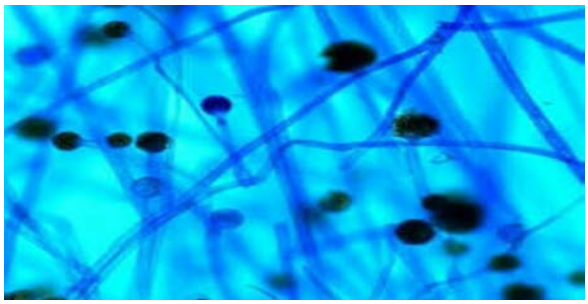


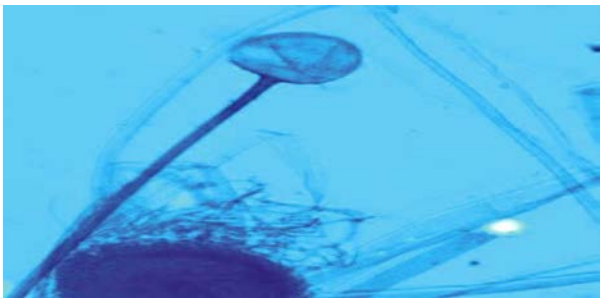
Aspergillus sydowii



Rhizopus stolonifer



Mucor spp



Rhizopus oryzae