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Isolation of Fungal Flora from Soil in Summer Season in Kinassery, Palakkad

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Abstract

The multi dynamic of soil and its ability to nurture different microbial source is an intriguing characteristic. Fungal flora is copiously present in the soil. The objective of this research work is to identify the fungal flora in the specific region of Palakkad.

Keywords: *Fungal flora, Palakkad, soil, microbial source*

INTRODUCTION

Soil is a very rich habitat for the growth of microorganisms than other microbial habitats. Among these microbes, fungi are one of the predominant groups present in the soil. Fungi live, multiply and die or disintegrate in the soil and thus they garner rich organic matter, which could be recycled as plant nutrition. Thus developed humus complex is the natural fertilizer melanged with soil and plays a very significant role in the composition of soil. The rhizosphereis the soil environment directly under the influence of the living rooSSts . There is a close link between plant species and the microbial community structure in the rhizosphere, and the hypothesis is that bacteria and the fungi have also developed a much unique diversity pattern over time, which may give insights into the microbial evolution. Fungal flora can be seen in copious amount in soil and also in termite soil or fungal mound (Sreeremya, the soil bacterial flora of specific region of Kannadipanchayat which is Kinassery is studied. Kinassery (10.7288° N, 76.6658° E) is a small Village/hamlet in the Kuzhalmannam Block in Palakkad District of Kerala State, India. It is under the Kannadi Panchayath. It belongs to the Central Kerala Division. It is located 8 Km towards South from District headquarters

Palakkad. 9 KM from Kuzhalmannam.293 KM from the State capital Thiruvananthapuram. Fungi could offer this benefit in comparison with bacteria in wastewater treatment processes. The biomass produced during fungal wastewater treatment has, potentially, a much higher value than that from the bacterial activated sludge process. The fungi can be availed to derive valuable biochemical and can also be availed as a protein source. Various high-value biochemical are generated by commercial cultivation of fungi under aseptic conditions using expensive substrates. Compared to other places in Palakkad like Chandra agar, Kanji ode, Pudusseryetc (Sreeremya, 2018a). Pollution in highway and rural areas are diverse (S. Sreeremya, 2018b). Different microbial diversity was observed not only in soil but also in Euphorbia plant species and other plant species (Srreermya.S, 2017). Bacterial flora and fungal flora of the same region can be studied and further assessed (Dr. Sreeremya.S, 2020).

Soil when considering the each flora and fauna is different. The most ecologically profound dsoil type is the termite soil (Sreeremya,(a) 2016). Cellullose utilizing microorganisms are majorly found in soil (Sreeremya et al., 2016c).Fungi is the major category of microbes abundantly isolated (Saravankumari et al., 2014).Other than cellulose, hemicelluloses and lignin are the macromolecules majorly present in the soil (Sreeemya (b), 2016). The cellulose content in the sol are mainly assessed by using Congo red dye (Cellulosic assay) (Sreeremya, 2018).

METHODS

Collection of Sample

Soil samples were collected from Kinassery, (10.7288° N, 76.6658° E) Palakkad.

Isolation & Morphological Analysis

The collected samples were serially diluted and enumerated after 5 days of incubaction in room temperature using colony counter (Upadhyay et al., 2005). The colony counter used in this experiment was LKB 2002 colony counter (Bowman et al., 1975).

Morhological and Microscopic Examination

The unique features of the colonies were observed and assessed by morphological examination (Jeris et al., 1973). Then the morphologically examined unique colonies were

microscopically examined by LCB staining (Lacto phenol cotton Blue) (Boudewijns et al., 2006).

RESULTS

From different regions of Kinassery, Palakkad (10.7288° N, 76.6658° E) Kerala, Soil samples were collected. The soil samples were granular, sparsely humid and appeared brownish to dark brownish in colour. The samples were collected, serially diluted and was spread plated. Different soil samples were collected and maintained at 4°C.

Spread plate technique was used for the separation of mixed population of microorganisms so that individual colonies can be isolated. For fungi 10-2, 10-3, 10-4 ,10-5 , dilution tubes, 1ml of suspension were transferred to petridish and the inoculum was mixed by gentle rotation using L rod. After 4 days of incubation at 25°C mixed population of microorganisms were obtained. Thus single colony of microorganisms was formed, unique distinguishable fungal colonies were obtained from soil collected from Kinassery then by inoculating a loop full of each specific colony of fungus to each potato dextrose agar plate. Incubated at for 7 days at 25°C. Three different pure culture of fungus were isolated from three different soil samples and were labeled as (Table1,2). The isolates inoculated on PDA plates were analyzed for their colony morphology and the observations were tabulated in table 1.

Table: 1 Cultural Characteristic

SAMPLE	COLONY COLOUR	TEXTURE
KI1	White	Glossy
KI2	Brown	Spreaded
KI3	Pink	Smooth

Key: KI –Kinassery, Isolate

Table: 2 Microscopic Observations of Isolated Fungi

SAMPLE	SPORE ARRANGEMENT	Estimated genus
KI1	Intercalary chlamidiospores	Candida sp
KI2	Bushyheadconidiospores	Alternariasp
KI3	Intercalary chlamidiospores	Fusariumsp

Description: *LCB mount observations of the isolated fungi were recorded in the table 2.*

CONCLUSION

From the fungal flora isolated from soil of Kinassery,Palakkad,it was found that in primary identification three isolates were obtained and named as K1,K2,K3.Later microscopic examination and further analysis it was found to be Candida,Alternaria and Fusarium species.

REFERENCES

1. Jeris, J. S., and R. W. Regan., (1973). Controlling environmental parameters for optimum composting. Composting Science, 14, 10-15.
2. Upadhyay, M. R. Prasad, A. Shrivastav, and K. Singh, “Eco tools for urban waste management in India,” J. Human Ecology, vol. 18, no. 4, pp. 253-269, Feb.2005
3. S. Sreeremya, Journal of Water Resource Engineering & Pollution Studies, Study of Air Pollution Tolerance Index of Plants Growing in Kinassery, Palakkad, 2018.vol (3)2:1-5.
4. S. SreeremyaTrends in Biosciences Termite Soil - Review. Vol: 9(4), Print: ISSN 0974-8431, 199-202, 2016.
5. Bowman, P.I., Ahearn, D.G. (1975). Evaluation of the Uni-Yeast-Tek kit for the identification of medically important yeasts. Journal of Clinical Microbiology. 2: 354–358.
6. Boudewijns, M., Bakkers, J.M., Sturm, P.D.J., Melchers, W.J.G. (2006).16S rRNA gene sequencing and the routine clinical microbiology laboratory. J ClinMicrobiol. 44:3469–3470.
7. S. Sreeremya .2018a.Study of Air Pollution Tolerance Index of Plants Growing in Malampuzha, Palakkad.4 (1):39-42.
8. S. Sreeremya, Journal of Water Resource Engineering & Pollution Studies, Study of Air Pollution Tolerance Index of Plants Growing in Kinassery, Palakkad, 2018b.vol (3)2:1-5.
9. Dr.S. Sreeremya, Journal of Research in Microbiology and Immunology, Isolation and Morphological Characterization of Bacterial Flora from Monsoon Soil in Kinassery, 2020.Vol 2(1):1-6
10. Sreeremya S. International Journal of Biochemistry and Biomolecules, Isolation of bacteria from the petals and pollen in Euphorbia sp, Vol. 3, No. 2, 2017. eISSN: 2455-7323.

11. S. Sreeremya (a)., Trends in Biosciences Termite Soil - Review. 9(4), Print : ISSN 0974-8431, 199-202, 2016
12. Sreeremya S, NishaaS, Rajiv P Optimization of Conditions and Production of Carboxy Methyl Cellulase By Bacteria Isolated From Higher Termite Soil, Bioprocess Biotech 2016c, 6:2
13. Saravanakumari P1, SreeRemya. S2 and T. Bhuvaneswari2, Journal of Pharmaceutical and Biological Research, 2014, Optimization and Mass Production of Cellulase by Aspergillus Niger and TrichodermaViridae, Vol.2 (2): 190-195-ISSN: 2347–8330.
14. S. Sreeremya (b), Advances in Life Sciences, Congo red-review, 5(4), Print: ISSN 2278- 3849,1123 -1126, 2016.
15. S. Sreeremya, International Journal of Cell Biology and Cellular Processes, Cellulosic Biomass – A Review, Vol. 4: Issue 1,2018.