

Study on Decomposer in Junona Lake dist: Chandrapur, Maharashtra, India

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ABSTRACT

Bacteria and Fungi are the decomposers that involve in the breakdown of detritus into nutrients and it is utilized by primary producers. During decomposition, they produce carbon dioxide and nitrogen and also improve the water quality. In the present work an attempt is made to identify the bacteria and fungi at generic level, on the basis of morphological, cultural, biochemical characteristics and staining technique. The present study was carried out for a period of one year and 3 species of bacteria and 2 species of fungi were identified.

Keywords: Decomposer and Junona Lake.

INTRODUCTION

Bacteria and Fungi dominates the decomposition in aquatic system. Phylogenetically they are distant but often live close proximity with each other. The two groups of microorganisms of greatest importance for decomposition are bacteria and fungi. In aquatic macrophyte litter, fungal biomass generally that of bacteria considerably, typically constituting above 90% of the total microbial biomass.[1-3] usually, fungi also have a higher production than bacteria hence perform the major part of the decomposition. [4-5] The low breakdown rate results in a more or less continuous metabolism of saprophyte litter. In combination with the immense amount of litter, this continuity is important for ecosystem stability for the for the otherwise highly fluctuating availability of organic carbon in lakes. [6]

The study carried out in Junona Lake, which is 7Km away from Chandrapur city. The present work was carried out for 1 year i.e. Feb. 2017 to January 2018. The plant litter and twigs were collected in every month during the morning time from shallow water.

METHODOLOGY

Plant Litter and twigs in the water at 10 cm depth, were collected by means of sterilized big forcep into the sterilized steel container to avoid the other infections over collected sample. The monthly samples were collected from the site during morning hours from the months of Nov. 2017 to Feb. 2018.

The collected samples were brought to the laboratory and plating was done. For isolation & Identification of bacteria and Fungi, Serial dilution technique was done. For isolation of bacteria, nutrient. Agar petriplates was used and fungi were isolated on Potato dextrose Agar (PDA) plates at 37°C for 2-3 days, for each sample. After incubation fungal and bacterial colonies were identified on the basis of

morphological, Biochemical and cultural Characteristics was studied by staining technique. Gram staining was performed for bacterial isolate and fungal staining was performed for fungal culture. After staining, photographs were taken by Nikon coolpix (12 MP & 18 X Wide HD) camera and genus were identified by using standard key and literature of R.C. Dubey and D.K. Maheshwari of practical microbiology.[7]

RESULTS AND DISCUSSION

During the period of investigation , decomposers bound to plant litter and twings of lake by following the procedure and incubation of bacterial and fungal colonies. 1 genera were recovered viz Escherichia coli, pseudomonas and Bacillus species and 2 fungal as Aspergillus and penicillum species were recorded on the basis of morphological, cultural and biochemical characteristics. Usually, fungi also have a higher production than bacteria hence perform the major part of the decomposition.[4-5]

Observation Table:

Bacterial Isolate	Plate -I	Plate - II	Plate - III
Morphological	Gram - ve, straight rod , Non-sproulating , Non-Capsulated	Gram - ve, rod ,actively motile and Non Capsulated	Gram + ve rod like
Cultural - EMB Agar Nutrient Agar Moc conceys Agar On Blood Agar	Metallic Green Grayish White Pink Color -----	Bluish Green Pigmented --- ---- Haemolytic colony	--- Dull Grayish White -- ---
Biochemical - IMVIC Indole Production Methyl Red Test Vogus proskaure Test Citrate Utilization Test	+ ve + ve - ve - ve	+ ve - ve - ve + ve	- ve - ve + ve + ve
B Sugar fermentation Lactose Glucose Manniol Sucrose	+ ve + ve + ve - ve	+ ve - ve - ve + ve	+ ve + ve + ve - ve
Fungal Isolate	Plate - I	Plate - II	
a) Colony character	Blackish fuzzy on PDA	Grayish green / cottony growth	
b) Microscopic view	Conidiophores a septate	Chain form	
	Conodia in chain form	Hyphae branched	
	Mycelium Septate brancheel	Sterigmata attached to conidia chain form	

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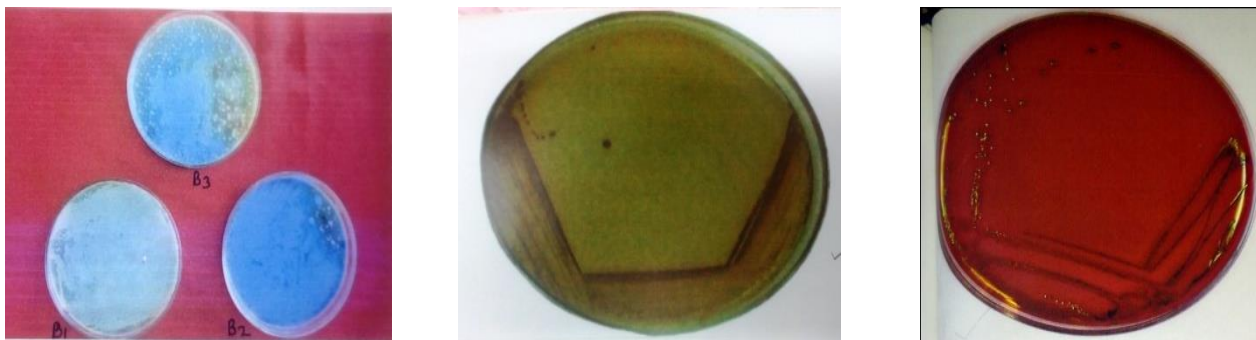
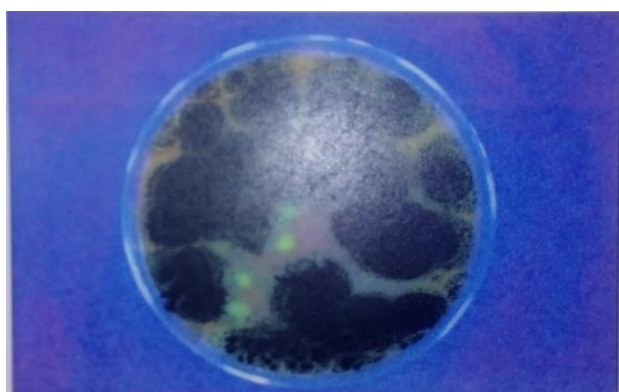
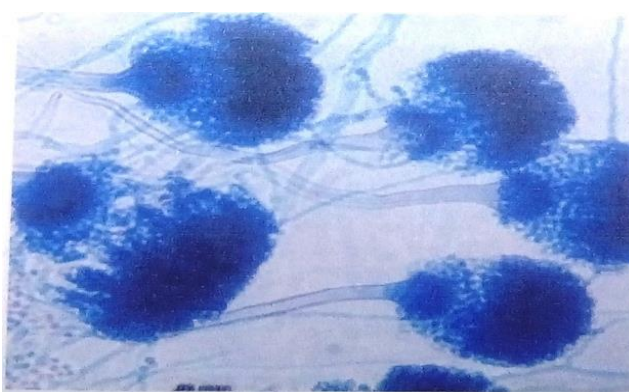


Fig: (a)Bacillus Isolation Agar Plate Showing Bacillus Species **(b)**Psuedomonas isolation, agar Showing psuedomonas species **(c)**Eosin methylene blue agar plate showing E.coli Morphology of Fungi



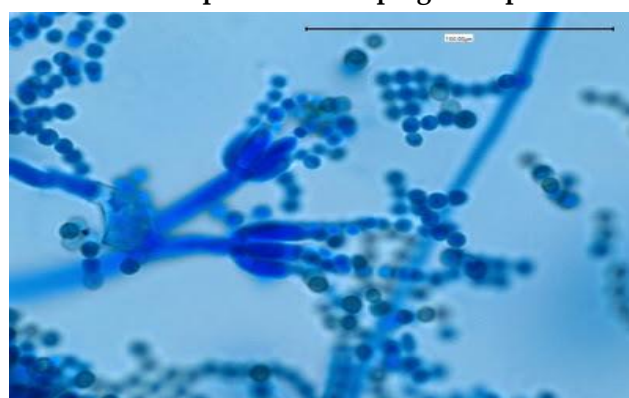
Asperillus on PDA Plate



Microscopic view of Aspergillus species



Penicillium species



Microscopic view of Penicillium species

Baldy, V and Gessner, M.O.[8] Study on Bacteria, fungi and the breakdown of leaf litter in a large river Oikas. There are even findings of bacteria adhering tightly to hyphae of mycorrhiza fungi and are thereby carried along with the hyphae.[9]

CONCLUSION

Decomposers like bacteria and fungi that involves in the process of breakdown of detritus into nutrients

and it is utilized by primary producers. Apart from this it produces carbondioxide and nitrogen and also helps in the improve water quality.

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Conflicts of interest: The authors stated that no conflicts of interest.

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