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## Screening the Fungus in Five Selected Cannals of the Coovum River

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### ABSTRACT

Coovum river posing a big threat to the Chennai urban dwellers because of its high sedimentation which hinders its free flowing. The sedimentation is due to accumulation of domestic and industrial waste. since microbes are considered to be the best source for degrading the pollutants and heavy metals, the preliminary attempt has been done to screen the microbes present in the drain water of five major canals of coovum river. Most of the samples showed pungent odour with P<sup>H</sup> range between 6.8- 7.5. In the fungal screening *Aspergillus niger*, *fumigate*, *Penicillium citrinum*, *oxalicum*, *Aspergillus flavu* *Cladosporium cladosporioides* And *Trichoderma viridewere* seen commonly in all the canals. Whereas species like *Rhizopus nigricans*, *Alternaria alternate*, *Fusarium Moniliforme*, *Rhizobus nodosus*, *Aspergillus niveus*, *Penicillium purpurogenum*, *Tricoderma harzianum* were pecific to certain canals. This type of studies will certainly form a base to design a method to utilization of these microbes for biodegradation or to formulate the method to eradicate the highly pathogenic microbes to protect the dwellers living near the selected canals of the coovum river.

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## INTRODUCTION

The Coovum River is an urban river which ends in the city of Chennai (formerly Madras) draining into the Bay of Bengal. [4] The Cooum River connects the canal to the Bay of Bengal in the center of Chennai. This river canals are polluted by, outfalls from industries, Commercial institutions, Sewage treatment plants, [7] Pumping stations, sewers, storm water drains and slums. In addition, health issues arise from the condition of the Cooum. [5] Diseases such as cholera, typhoid, hepatitis and others, and pathogenic parasites, are associated with pollution of the water and the accumulation of organic (faecal) sludge. The river will become a bigger sewer and eventually create health problems and a stench throughout the northern part of the city. It'll worsen, endangering people lives. A major resource of monsoon drainage in the city would be lost. The city will be exposed to furthermore health hazards [6] and environmental hazards. The pollution to the adjacent residents will be more and more, and the problem could not be controlled. The flora and fauna that is existing will disappear. Hence basing on the afore said benefits this study is designed to screen the harmful and beneficial microbes and heavy metals to assess the extent of treatment required to convert the drain water for further treatment.

The study can be further extended to filter the sediments to reduce the density of the water through siphon pumping to lift the water for further treatment ultimately utilize the water for irrigation purpose and to trap considerable quantity of manure. The objective of this work is to screen the five selected canals [8] of cooum for pathogenic microbes and heavy metals. This study can be further extended to advice the government regarding type of treatment required to utilize the pathogen free drain water for irrigation.

## MATERIALS AND METHODS

Samples were collected from five cooum canals such as, Adyar canal [1], Basin bridge canal [2], Kondungaiyur canal [3], Ennore canal [4] and Tondaiyarpeta canal [5].

The samples were collected from the banks of the cooum using spade like equipment while collecting the sample utmost care was taken to collect the samples in wet condition. [1]

### Screening of fungus

The collected samples were diluted using serial dilution like,  $10^{-1}$ ,  $10^{-2}$ ,  $10^{-3}$  after dilution it was sub cultured in the Petri plates in potato dextrose agar using spread plate technique.[9] After 3 days of incubation at room temperature, the plates were screened for the Fungal growth colonies which is

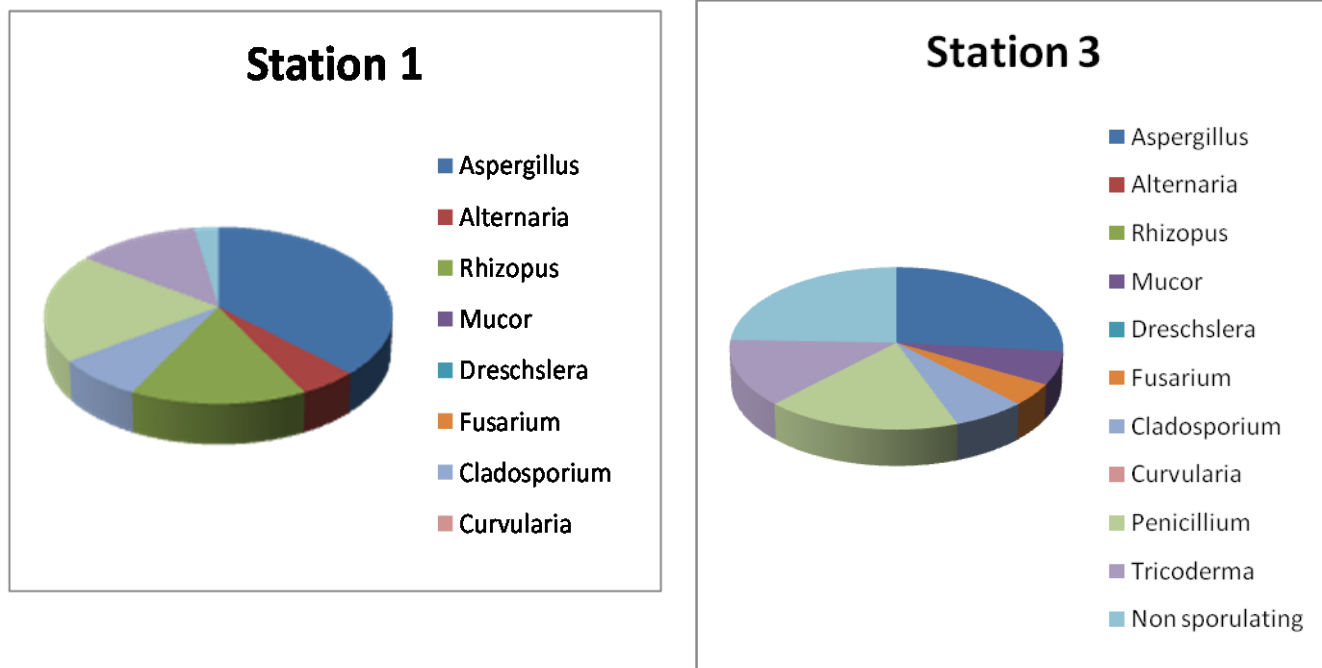
further identified using their morphology screening through compound microscope.[2]

### RESULTS AND DISCUSSION

In the fungal screening all the canals showed maximum population of genus *Aspergillus* followed by *penicillium*, *Non sporulating* and *trichoderma* was observed [table 1]. Regarding *rhizopus* it was observed in canal 1 and 2 whereas *Dreschslera* was observed only in canal 2. The species *penicillium* was observed in most of the canals whereas other species randomly found in maximum number of canals. [Table 1 Fig no 1-3]. From the results it is evident that all the canals showed maximum population of *Aspergillus* in most of the canals. From the earlier study it is evident that some species of *aspergillus* can cause infection in humans such as infection to the external ear, skin lesions, and ulcers. [10] The other genus *Cladosporium* also seen in all the canals which is rarely pathogenic to humans, [3] but have been reported to cause infections of the skin and to nails, as well as sinusitis and pulmonary infections, if left untreated, these infections could turn into respiratory infections like pneumonia.

S. No	Genus	Station 1	Station 2	Station 3	Station 4	Station 5
1	<i>Aspergillus</i>	37.5	27.28	26.66	44	33.34
2	<i>Alternaria</i>	5	0	0	12	0
3	<i>Rhizopus</i>	15	18.19	0	0	0
4	<i>Mucor</i>	0	0	6.66	8	2.3
5	<i>Dreschslera</i>	0	0	0	0	13.4
6	<i>Fusarium</i>	0	9.09	4.44	8	4.45
7	<i>Cladosporium</i>	7.5	9.09	6.66	4	6.67
8	<i>Curvularia</i>	0	6.06	0	0	11.12
9	<i>Penicillium</i>	20	12.13	17.78	16	20
10	<i>Trichoderma</i>	12.5	3.03	13.34	4	4.45
11	<i>Non sporulating</i>	2.5	15.16	24.45	4	4.45

Fig 1



Pie Charts (Percentage composition for individual stations)

Fig 2

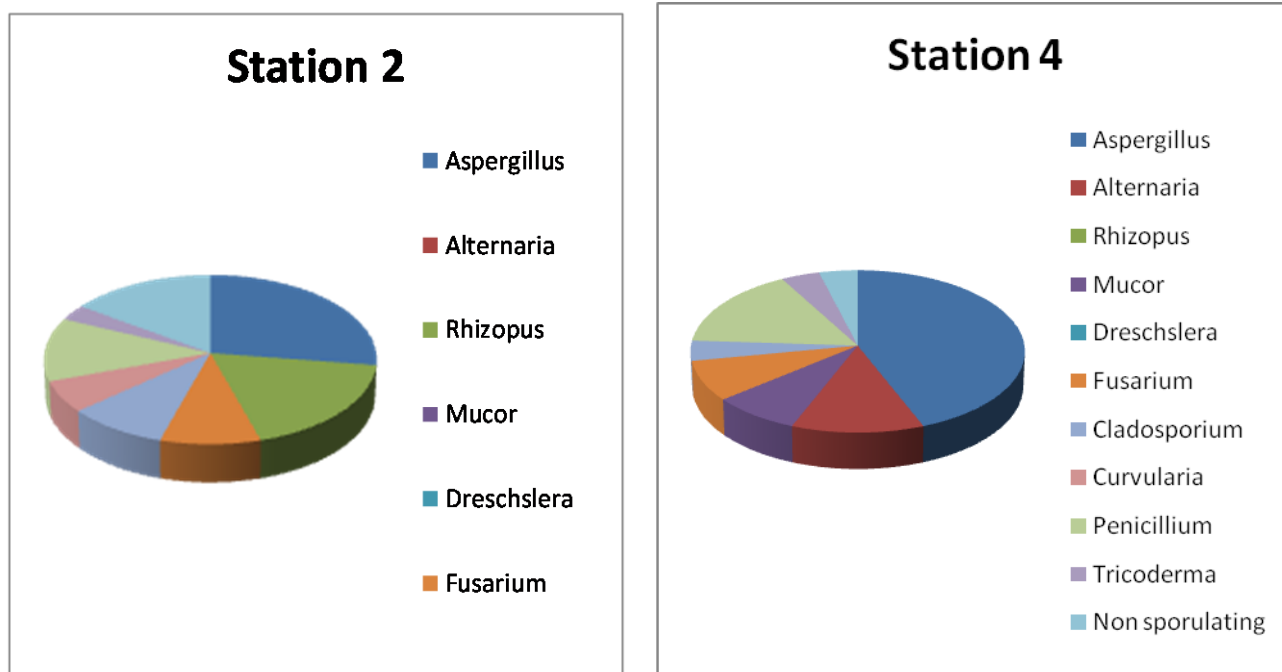
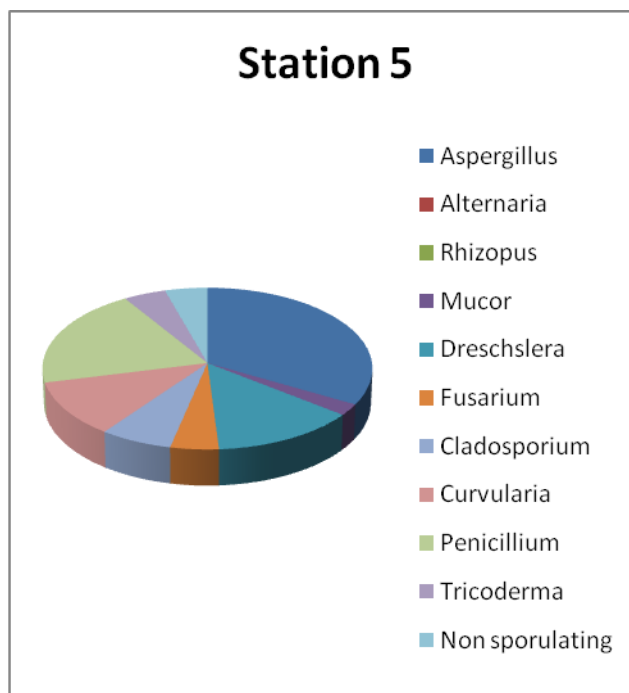


Fig 3



Hence higher treatment is required to eradicate this fungus to protect the nearby dwellers. Whereas other species are specific only to certain canals hence depending up on the microbes the treatments can be formulated. Such type of work can form a base to design method to convert coovum for domestic utilization and irrigation. The present work deals with the possible ways to make the coovum drain water into irrigatable form. From the microbiological screening we can have awareness about the type of harmful pathogens present in the drain water. Apart from this it also explores the type and quantity of disinfectant required to control the pathogens.

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