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Isolation and Identification of Bacteria in Aqueous Solution at Ganga River Haridwar

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ABSTRACT

The present study was proposed to investigate the status of bacteriological parameters at Haridwar, water samples were collected from five different sites for analysis of isolation and identification using bacteriological cultures or medium. The results of analyzed parameters were compared with scientifically approved water quality criteria to understand the status, quality of water environment present study recorded the whole area due to the extreme level of bacteriological analysis which may cause dreadful effects on aquatic life.

Keywords: Dreadful, Effect, Aquatic life, Culture.

INTRODUCTION

Water is a main source for the healthy living organisms, but when it becomes polluted by the suspension of physical and chemical contaminants may affect the life negatively.

The present study was conducted to estimate the biological condition of water of a stream, which receives the entire effluents from the nearby ashes or coracase in rivers.

The ability to sporulate provides or edge to certain bacterial species over other living beings in that they can survive under critical environmental conditions like depletion of nutrients, extreme temperature, PH, and presence of toxic chemical substances such bacterial cells have reduced the level of metabolic activity and are unusually resistant to various environmental stress. The health of the river and their biological diversity are directly related to the health of almost every component of ecosystem monitoring of water quality is an initial step to be taken up for the management and conservation of any aquatic ecosystem.

MATERIAL AND METHOD

Samples were collected from five different sampling station 1,2,3,4 and 5 for a year (2003, 2005).
The samples were collected at 6-11 am during the first week of each month. All samples were analyzed in the laboratory.

Isolation-Isolation is done by using agar medium or culture is done by the help of serial dilution $10^{-}1$ to $10^{-}9$ mm. Replica plating technique was used for transfer of colonies from starch agar to nutrient agar. Plates of agar were treated with iodine, Colonies, which showed the zone of starch solubilisation, were selected for further study, isolates were identified by according to various biochemical characterizations, which shows the different strains as gram +ive or gram -is facultative on aerobic or aerobic both.

Inoculum preparation –vegetative inoculums was used in present studies or by fermentation technique.

METHOD OF ISOLATION

Two methods were used to isolate bacteria are.

1. Pour Plate method

2. Streak plate method

Pour Plate Method
In this method 5 or 6 cultures tubes each containing 9 ml distilled water were sterilized after plugging for serial dilution. The sample was vigorously shaken and 1ml was transferred to the first culture tube. Now 1ml water from the first tube was again transferred to 2nd test tube as so on, separate pipettes were used for used for each transfer, the dilutions were 1:10,1:100,1:1000, and so on

3 pons of borosil Petridishes was transferred to the petridishes by opening them gently 15-20 ml medium was poured into these plotes.The temperature of NAM Should be about 45˚C both water sample and medium were mixed by gently rotating the plate when medium become solidify the plates were inverted and incubated at 37 ±2˚C temperature for 48 hours.

Stveak Plates Method
From these poured plates individual colony was transferred with the help of sterilized /00 pl by incineration on another media plates and streaked.These plates were incubated for further 48 hours at 37 ±20˚C for identification of pure Colony.

Identification of bacteria
Each isolated colony was incubated at below 20˚C (pscrophileic), 20-45˚C (Mesophielic) and 45˚C and above (thermophilic).

Gram staining using crystal violet (primary stain) or fuchsin (counterstain or stain by alcohol.
Aerobic, facultative anaerobic or anaerobic Culture by liquid soya casein digest medium (Hi-media)
Motility by grooved slide fermentation, growth by gas /acid production in mac Conkey's broth medium.

TABLE 1.1: QUANTITATIVE ANALYSIS OF MONTHLY VARIATION AMONGST THE BACTERIAL SPECIES.

Months	January	February	March	April	May	June	July	August	September	October	November	December
Bacterial Species	2003-2004											
Escherichiacoli	+	+	+	+	+	+	+	+	+	+	+	+
Pseudomonas Aeruginosa	+	+	+	+	+	-	+	+	+	+	+	+
Streptococcus facecalis	+	+	+	+	-	+	+	+	+	+	+	-
Stretococcus aureus	+	+	+	+	+	+	-	-	+	+	+	+
Clostridum Perfringes	-	+	+	+	+	+	+	+	+	+	+	+
Aerobacter aerogens	+	-	+	+	+	-	+	+	+	-	+	-
Bacillus subtilis	-	+	+	+	+	+	+	+	+	+	-	+
2004-2005												
Escherichiacoli	+	+	+	+	+	-	+	+	+	+	+	+
Pseudomonas Aeruginosa	+	+	+	+	+	-	+	+	+	+	+	+
Streptococcus facecalis	+	+	+	+	-	+	+	-	-	+	+	-
Stretococcus aureus	+	+	+	+	+	+	-	-	+	+	+	+
Clostridum Perfringes	-	+	+	+	+	+	+	+	+	+	+	+
Aerobacter aerogens	+	-	+	+	+	-	+	+	+	-	+	-
Bacillus subtilis	-	+	+	+	+	+	+	+	+	+	-	+

+ = Persent - = Absent

RESULT AND DISCUSSION

Isolation and identification of bacteria.

In the present study, 7 species of bacteria were identified in which pathogens and non-pathogens were differentiated within the stretch of the study area, Isolated bacterial cultures were Escherichia coli, Pseudomonas aeruginosa, streptococcus facelis, staphylococcus agrees, clostridium perfringes, Aerobacteer, aerogens and they found as pathogens whereas the non-pathogenic bacteria were Bacillus subtilis.

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