IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 3, December 2022
Impact Factor: 6.252

Identification of Bacteria Causing Corrosion

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Abstract: *Microorganisms they have been around for billions of years and can live in incredibly difficult environments and under extremely severe conditions. They utilize exceptionally diverse food sources and some of the by products produced by their metabolisms can be damaging to metals. The corrosion of a material when the presence of microorganisms plays a role in is known as microbiologically influenced corrosion (MIC). Activities of bacteria, Archaea, and fungi in colonies that create biofilms on surfaces of materials, or in local environments that directly contact materials, can result in MIC; and most metals, as well as some non-metals, can be affected by this type of corrosion Finding the characteristics of a microbiological presence where corrosion is present has numerous goals. These include establishing a link between microbiological activities, corrosion reactions, and corrosion products in a specific environment; identifying particular microbes that support the corrosion mechanism seen in that environment; and connecting corrosion reactions/corrosion damage with the presence of microbes at some point in the corrosion process. According to TM0212-2012, three requirements must be satisfied for MIC to be accepted as the root cause of internal corrosion.*

Keywords: Microorganisms

I. INTRODUCTION

What is MIC, or corrosion that is influenced by microbes? Corrosion that has been influenced by microorganisms is referred to as microbiologically influenced corrosion. Other uncommon terminology used by some authors in the literature on corrosion include microbial corrosion, bacterial corrosion, and biological corrosion. In waterways and soils with pH 4–9 and temperatures 10°C–50°C, there are roughly a dozen bacteria that are known to produce microbiologically influenced corrosion of carbon steels, stainless steels, aluminium alloys, and copper alloys. These microorganisms can be broadly categorised as either aerobic (needs oxygen to function) or anaerobic (oxygen is toxic to the bacteria). The majority of accelerated corrosion damages to ships and offshore steel structures are caused by anaerobic sulphate-reducing bacteria (SRB). Aerobic bacteria are those that oxidise iron and manganese.

II. METHODOLOGY

2.1 Sample Collection

Sample was collected of rusted bike in a sterile saline test tubeThe rusted sample of 2 different vehicles was taken
One was collected from bike and another was collected from a car
Bacteria that causes rust was taken as subject sample for this study , rusted samples were collected from different vehicles One of the sample was collected from a 10 years old rusted bike parked outside the garrage (Local garage) where as the another sample was collected from a 4 wheeler vehicle parked outside police station The samples were collected in sterile containers and stored in sterile saline until they were delivered in laboratory , The pathogens were maintained and the culture suspension was made and then propagated on to the plates under septic condition between the burners

2.2 Isolation of sample on Nutrient medium

Sample collected in sterile saline was isolated on sterile nutrient agar plate and kept in incubator at 37 degree Celsius for 72 hours and observed a mate growth, After incubation, the saline suspension was pipetted out from a sterile 10ml pipette and loaded in Nutrient agar plates. The bacteria was then spread equally to all sides using spread plate technique.

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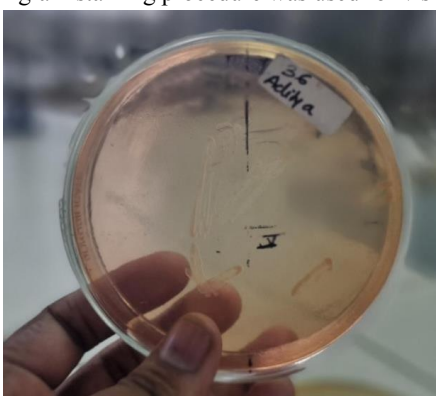
2.3 Sample Loading

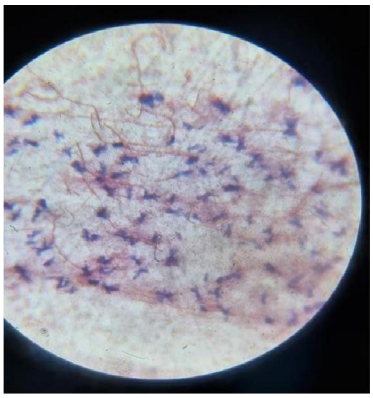
Sample was loaded on to the sterile nutrient agar plate by using spreader in sterile condition Bacterial sample that was incubated at 37 degree Celsius for 72 hours was taken out and the grown culture on media were used for staining method ,each plate culture medium was taken and gram staining was done (by using different stains i.e Crystal violet, iodine, distilled water, decolourizing, safranine and blot , oil immersion) After staining , slide was observed under microscope at 100×

2.4 Observation Growth

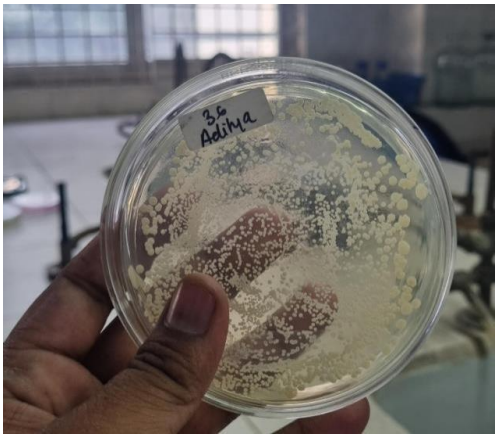
The agar plates were incubated for 72 hours. After incubation it was observed that there was a mate growth and after incubation gram staining procedure was used for visibility of bacteria and were observed at 100× microscope



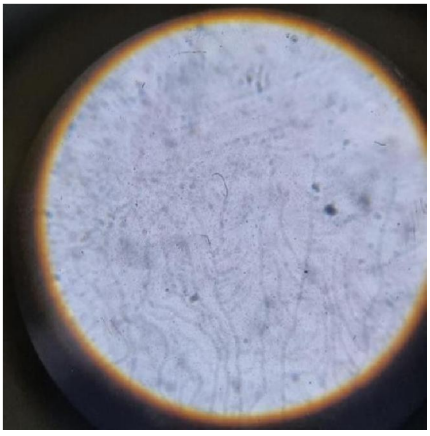
MacConkey's agar plate.



Growth found on Nutrient agar plate



Nutrient agar plate



Growth of bacteria on MacConkeys agar plate

2.5 Result

Different plates were used for isolation of rusting of iron bacteria

III. CONCLUSION

This bacteria can be used for demineralization and breakdown for any future use

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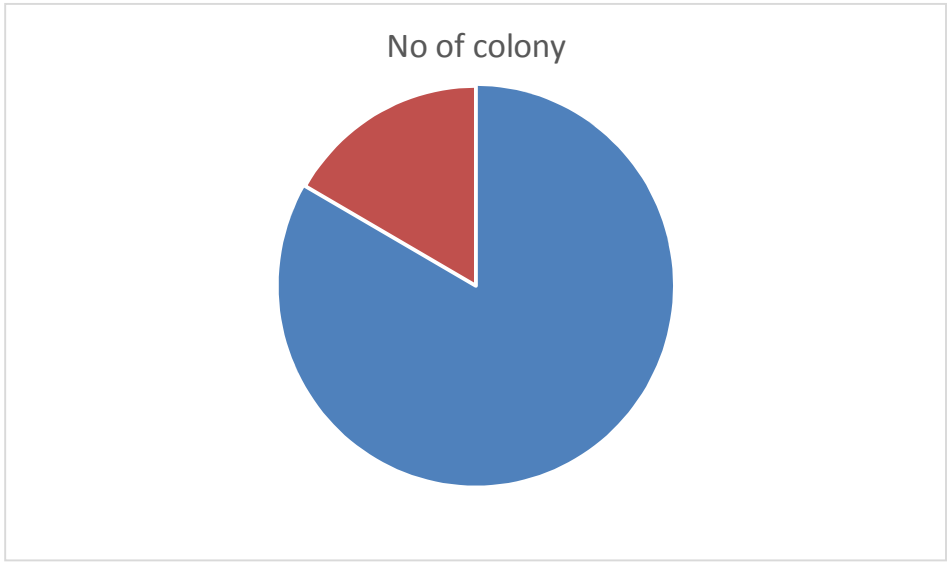

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