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To Check the Toxicity of Plaster of Paris on Natural Water's Microflora during Ganesh Chathurthi

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Abstract: *Ganpanti idol immersion each year during ganesh chathurthi is adding the load of pollution to the natural water bodies and the microflora of these water bodies too. Non biodegradable material and synthetic paint used in making these idols are causing serious threat to the microflora because of there chemical contents that may resist the growth of the bacteria. Present study was conducted to observe the effect of these idol made up of POP on water's natural microflora. For this the water sample was collected after the immersion of ganpati idols. The water was taken from Sanjay Gandhi National Park (SGNP). The water had a great amount of calcium. There was a change in pH of water, hardness was seen in water taken after the immersion. Hydrological changes were observed in water due to ganpati idols immersion during and after the visarjan.*

Keywords: Ganpati idols, Plaster of Paris, zone of inhibition

I. INTRODUCTION

The most vital resource for life is water. There cannot be life without fresh water. The issue of water are becoming increasingly important to environment particularly to the human health and their food. Festivities such as Ganesh Chaturthi pollute the water and make it hazardous for human as well as natural microflora of the water. It is important that there should be less use of Ganpati idols because this immersion to the water directly affects to the microflora of the water making it undrinkable and an environment not suitable for the growth of microflora and other organisms which survive in water.

Plaster of Paris is a quick setting gypsum plaster which consists of a fine white or off white powder known as calcium sulphate hemihydrate. The role of this calcium sulfate hemihydrate is to harden when it is moisturized and then allowed to dry. Discovered during the ancient times, Plaster of paris is so called because of its preparation from the abundant gypsum found somewhere near to Paris. Plaster of Paris is a popular chemical substance that is utilized most commonly for sculpting materials and in gauze bandages. It is usually obtained from calcining gypsum. In other words, we can say that the Plaster of Paris is usually made up of heated gypsum at a high temperature.

Plaster of Paris is also referred to as Gypsum plaster. The chemical formula of Plaster of Paris is written as $CaSO4•1/2H2O$.

Plaster of paris is used in India very often during one of the biggest festivities in India, the Ganesh Chathurthi. In which ganpati idols are made out of POP. It is a 11 day long occasion in which we immerse the ganpati idols in the rivers and the ponds and all the near marine biodiversities. This causes affect to the natural marine microflora and harms them in some or the other way. Idols are made of so many materials like wood, stone, bamboo, jute, grass, clay and plaster of paris (PoP). To make these idols decorative and attractive they are painted with bright synthetic colour or lead oxide (Sindoor-orange colour) mixed with oils which contain large amount of heavy metals. Wood, stone, grass, jute, flowers, germinated seeds, leaves etc. Such material may contain a wide variety of organic and inorganic pollutants including oil, grease, plastics, heavy metals and suspended solids and cause short term deterioration of water quality due to their decay.

II. METHOD AND MATERIALS

The present study were carried out in the laboratory to find the impact of POP idols of Ganpati. Water containing pop after ganpati visarjan was taken to study the impact of these idols on the natural microflora of water.

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2.1 Collection of Samples

The water sample containing Plaster of paris was taken from the natural pond of Sanjay Gandhi National Park. The colour of this water sample was dusty white. The water sample containing pop was stored in a plastic container and then capped and labelled properly. Then this sample was taken laboratory analysis.

2.2 Bacterial Strains Used

Culture suspension of Psuedomonas aeruginosa and Escherichia coli

2.3 Isolation of Bacteria

The purpose of spread plate method is to produce Matt growth of the bacteria on the nutrient agar plate and find out the impact of plaster of paris on the growth of both of the bacteria.

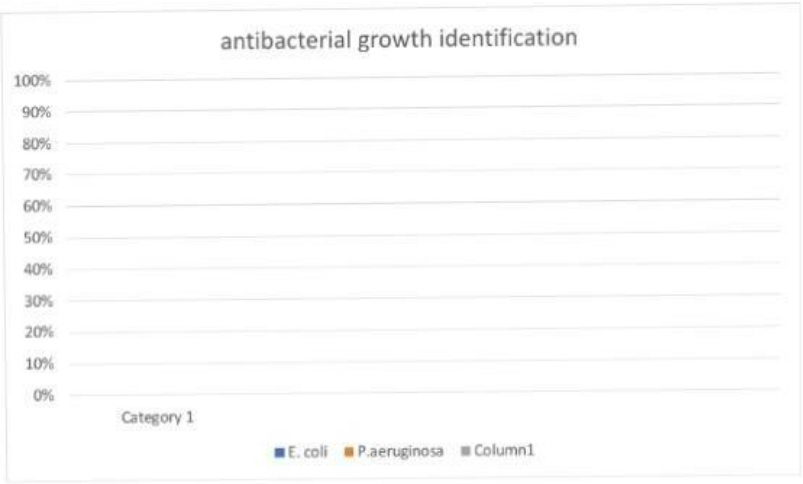
Around 1 loop full culture of *Pseudomonas aeruginosa* and *Escherichia coli* was suspended in 10 ml saline solution (1% V/V). Then after, 2ml was used to inculcate upon petri dish using spread plate method. After the spreading, incubation for about 30 minutes was done. Made 1 well in both the plates using sterile cork borer. After which, 0.1 ml of water sample was added in to the well with the help of micro pipette. Petri plates were then incubated at 37 degree Celsius for 24 hours.

2.4 Screening by Cork Borer Method

Antimicrobial activity of cell free extract was evaluated by the cork borer method against the indicator organism. A lawn of bacteria was expected to grow after the spreading the suspension of the culture on the surface of agar. Sample of water containing Plaster of paris was incorporated on both the well on the respective plates at an amount of 0m1 ml and were incubated for 24 hours at 37 degree Celsius. The result were recorded by observing and measuring zone of inhibition.

2.4 Observation Table

Bacteria	Sample	**Zone of inhibition (in mm)**
Pseudomonas aeruginosa	Water sample containing POP	0 mm
Escherichia coli	Water sample containing POP	0 mm



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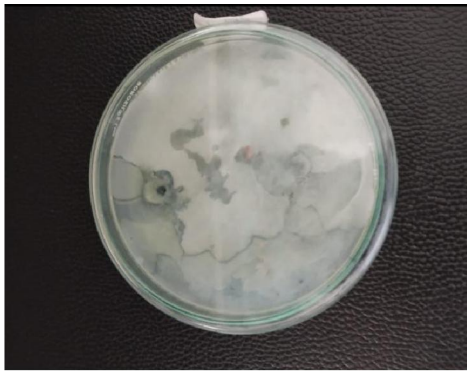
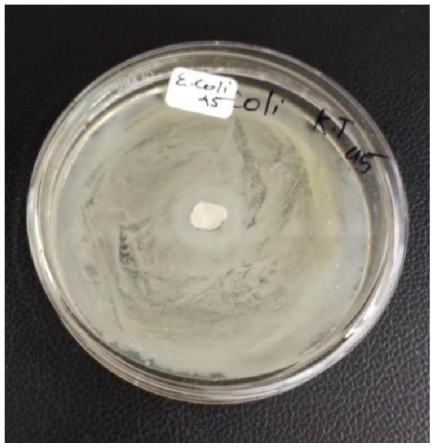


Psuedomonas aeruginosa growth on nutrient agar plate



Escherichia coli growth on nutrient agar plate

III. RESULT AND DISCUSSION

Zone of inhibition was not observed on any plates. This does not necessarily indicate that the micro organisms have been killed by this product just that they have been prevented from growing due to addition of plaster of paris.

Escherichia coli growth on nutrient agar plate

IV. CONCLUSION

After the 24 hour incubation of the petri plates under lab conditions, it was concluded presence of plaster or paris in the form of idols does not inhibit the growth of the natural and normal microflora of the water bodies. It could be assumed that pop idols after immersion in the natural water bodies remain as it is without dissolving with water and causing the problem of sedimentation and then causing slow pollution in the water.

REFERENCES

[1]. APHA, 2005. Standard method for examination of water and waste water, American Public Health Association, Washington.

[2]. Kaur, R, 2012, effect of idol immersion on marine and fresh water bodies, Advances in applied Science Research 3(4), 1905-1909.

[3]. Bharatha, L.B, Rao, K.M and Bangarama, Y, 2001. Impact of industrial pollution on nutritive value of Liza Parsia from Harbour waters of Vizag, Aquacult . 2(2), 111-116.

[4]. https://www.researchgate.net/publication/313037419_Study_of_the_Impact_of_Plaster

[5]. _Of_Paris_Pop_and_Clay_Idols_Immersion_in_Water#:~:text=The%20POP%20waste%20from%20such,2014)%20

[6]. https://byjus.com/jee/plaster-of-paris/