Bacterial Colonies Growth in Presence of: Al, Ni, Pb, Cd, and Zn

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Biogeochemistry is the study of the relationship between the chemical processes of earth, and life. Understanding these chemical processes also provide further information related to environmental problems. Biogeochemical cycles can be impacted by waste in the environment, especially those of the metallic type. Water can be contaminated when these metals are discharged or are in contact with water bodies. This experiment evaluated the effect of specific concentrations of heavy metals in river water allowed by EPA, on the growth of different types of bacterial colonies which are essential in many biogeochemical processes. The required conditions for colony growth were recreated transferring a nutrient agar in six independent petri dishes. After solid media preparation, 1.0 ml of river water transferred to a fish-tank was added to each. The petri dish selected as Control was not exposed to any metal solutions. For he remaining five, 0.5 ml of a specific metal solutions (Al 0.2ppm, Ni 0.1ppm, Pb 0.015ppm, Cd 0.005ppm, and Zn 5ppm) were added, respectively. After incubating plates for 48 hours at 37°C, they were inspected under a dissecting microscope, and colonies were classified according to their morphology. With a manual bacterial colony counter, the quantity of species per colony were counted and recorded. This exact procedure was repeated two more times. Data was graphically analyzed. Bar charts and Pie charts generated displayed the individual bacterial growth frequency for each category, and were used to show consistency between groups. Box plots were used to show behavior of bacterial growth when compared to the Control. It was determined that the metals have an impact in bacterial colonies growth.

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