ABSTRACT

A study was conducted to determine the physico-chemical properties of Imus River, identify the species of *Pseudomonas* present, determine the antibiotic resistance and metal tolerance patterns of *Pseudomonas* isolates, and establish the correlation between physical and chemical parameters of Imus River and population of *Pseudomonas* spp. tolerant to heavy metals and resistant to antibiotic.

Water samples were collected from five stations, namely: Balite Bridge (Station 1), Dasmariñas Bridge (Station 2), Palanan Bridge (Station 3), Imus Toll Bridge (Station 4) and Island Cove Bridge (Station 5). These samples were examined for their physical and chemical characteristics. The physical and chemical characteristics of different river stations varied which could be due to the presence of vegetation, factory and public market near some river stations. The highest total plate count and *Pseudomonas* count was obtained in Dasmariñas Bridge Station (1.40 x 10^8 and 9.65 x 10^7), followed by Palanan Bridge Station (1.92 x 10^5 and 9.7 x 10^3), Island Cove Balite Bridge Station (1.64 x 10^4 and4.4 x 10^2), Bridge Station (1 x 10^4 and 3.4 x 10^2) and Imus Toll Bridge Station (5.2 x 10^3 and 4.01 x 10^3). The *Pseudomonas* isolates were identified as *P. aeruginosa* and P*. stutzeri*.

Antibiotic susceptibility testing revealed that all isolates were found resistant to ampicillin, amoxicillin, cephalexin and erythromycin, and susceptible to streptomycin, ofloxacin, doxycycline and tetracycline. All *P. stutzeri* showed resistance to clindamycin compared to 77.89% of *P. aeruginosa* isolates.

Twenty-one (22.11%) and 74 (77.89%) isolates of *P. aeruginosa* exhibited tetra- and penta-drug resistance, respectively while *P. stutzeri* isolates exhibited penta-drug resistance. Majority of *Pseudomonas* isolates were resistant to 400 ppm concentration of heavy metals with exception of mercury and cobalt. They were found tolerant to 800 ppm concentration of zinc and arsenic. Penta- and hexa-tolerance of isolates were observed at 400 ppm concentration of heavy metals while bi- and tri-tolerance were recorded on 800 ppm concentration of heavy metals.

No correlations exist between the physico-chemical parameters and the antibiotic resistance and metal tolerance *Pseudomonas* spp. isolated from Imus River.