

Bioflocculation Using the Purified Wild Strain of *P. aeruginosa* Culture in Wastewater Treatment

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Abstract : *P. aeruginosa* EF2 was isolated and identified from human infection sources before in our previous study. The present study was performed to determine the characteristics and activity role of bioflocculant produced by the bacterium in flocculation of the wastewater active sludge treatment. The bacterium was inoculated and then was grown in an orbital shaker at 250 rpm for 5 days at 35 °C under TSB and peptone water media. After incubation period, culture broths of the bacterial strain was collected and washed. The concentration of the bacteria was adjusted. For the extraction of the bacterial bioflocculant, culture was centrifuged at 6000 rpm for 20 min at 4 °C to remove bacterial cells. Supernatant was decanted and pellet containing bioflocculant was dried at 105 °C to a constant weight according to APHA, 2005. The chemical composition of the extracted bioflocculant from the bacterial sample was then analyzed. Wastewater active sludge sample obtained from aeration tank from one of wastewater treatment plants in Tehran, was first mixed thoroughly. After addition of bioflocculant, improvements in floc density were observed with an increase in bioflocculant. The results of this study strongly suggested that the extracted bioflocculant played a significant role in flocculation of the wastewater sample. The use of wild bacteria and nutrient regulation techniques instead of genetic manipulation opens wide investigation area in the future to improve wastewater treatment processes. Also this may put a new path in front of us to attain and improve the more effective bioflocculant using the purified microbial culture in wastewater treatment.

Keywords : wastewater treatment, *P. aeruginosa*, sludge treatment

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