ABSTRAK

Sungai Kaliotik merupakan sungai penting Kabupaten Lamongan yang terletak di tengah pusat kota melintasi pemukiman penduduk dan termasuk sumber air dalam kegiatan pertanian, budidaya ikan di sekitar Daerah Aliran Sungai (DAS). Namun seiring berjalannya waktu kondisi kualitas air Sungai Kaliotik terindikasi tercemar karena polutan yang terus masuk ke perairan. Salah satu cara alternatif yang dapat dilakukan adalah dengan penambahan koagulan yang berasal dari mikroorganisme yaitu imobilisasi bakteri menggunakan teknologi enkapsulasi alginat. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan imobilisasi *Pseudomonas sp.* menggunakan enkapsulasi alginat dalam memperbaiki kualitas air sungai dan menurunkan kadar minyak dan lemak air sungai. Jenis penelitian yang digunakan adalah *experimental research* dan pengambilan sampel dilakukan dengan metode grab komposit sampling. Metode penelitian yang digunakan adalah deskriptif kuantitatif dengan membandingkan hasil pengukuran bahan pencemar sebelum dan sesudah diberi perlakuan. Berdasarkan dari analisis Anava 1 arah terdapat pengaruh penambahan imobilisasi *Pseudomonas sp.* dalam meningkatkan kualitas air Sungai Kaliotik yakni penurunan kadar COD sebesar 77.5% serta penurrunan kadar minyak dan lemak yakni sebesar 20%.

Kata Kunci: Sungai Kaliotik, Imobilisasi, *Pseudomonas sp.*, Enkapsulasi, Alginat.

ABSTRACT

The Kaliotic River is an important river in Lamongan Regency, which is located in the middle of the city center crossing residential areas and is a source of water for agricultural activities, fish farming around the Watershed (DAS). However, as time went on, there were indications that the water quality of the Kaliotic River was polluted due to pollutants that continued to enter the waters. One alternative way that can be done is by adding coagulants derived from microorganisms, namely immobilizing bacteria using alginate encapsulation technology. This study aims to determine the effect of immobilizing Pseudomonas sp. using alginate encapsulation in improving the quality of river water and reducing the oil and fat content of river water. The type of research used is experimental research and sampling is done by grab composite sampling method. The research method used is descriptive quantitative by comparing the results of measurements of pollutant before and after being treated. Based on the 1-way Anava analysis, there was an effect of adding Pseudomonas sp. immobilization. in improving the water quality of the Kaliotic River, namely reducing COD levels by 77.5% and reducing oil and grease levels by 20%.

Keywords: *Kaliotic River, Immobilization, Pseudomonas sp., Encapsulation, Alginate.*