ABSTRACT

Bio-extract is a solution composed of a diverse variety of microbes coexisting together, aiding the metabolism of each other. Nowadays bio-extract is widely use for many purposes and one of the popular usage is for wastewater treatment. In this experiment, the biodiversity of the bio-extract was determined by selective and non-selective enrichment mediums. For the treatment of restaurant wastewater (collected from local department store food court and steak restaurant), 0 (control), 0.25, 0.5 and 1 ml of bio-extract were inoculated per liter of wastewater. In the treatment procedure, light (with light and without light), time (24 hours and 48 hours), and oxygen (with oxygen and without oxygen) were varied. After treatment, the wastewater sample's chemical and microbiological properties were tested. The chemical properties measured were total solid (TS), BOD, total suspended solid (TSS), total dissolved solid (TDS), pH and grease and oil. The microbiological properties were measured by MPN method and total plate count method. The bio-extract biodiversity was found to contain *Bacillus spp.* 3.00×10^3 CFU/ml, mold 3.63×10^3 CFU/ml, lactic acid bacteria 4.35×10^4 CFU/ml, Actinomycetes 1.27×10^5 CFU/ml, and yeast 1.35×10^5 CFU/ml. When using bio-extract to treat restaurant wastewater, there were significant reduction of TS and grease and oil at 53.07% and 69.89% respectively. The best condition for restaurant wastewater treatment was 0.25 ml of bio-extract per liter of wastewater without oxygen and light for 48 hours. However, the quality of treated wastewater was still above the standard required therefore further experiment will be needed to improve the quality of water before discard.

Keywords: Bio-extract, biodiversity, TS, BOD, Grease and oil, MPN