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A CASE STUDY ON THE EFFICACY OF OIL CONTAMINANTS BIOLOGICAL REMEDIATION USING *Scenedesmus obliquus* ALGAE

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Abstract

The discharge of crude oil to the environment has become a problem of great concern all over the world during recent decades. To tackle this crucial challenge, the present study was conducted to investigate the potential of cultivation algae in experimental oil medium. In this regard, we employed *Scenedesmus obliquus* cultivated at three different contact times and concentration of oil. The microalga treatment was performed using crude oil/water concentrations of 0.5, 1.5, and 2.5 mg/L (1, 7, and 14 days). According to the results, *S. obliquus* had not only a high level of resistance to contaminants, but also a strong capacity to remediate crude oil hydrocarbons, on average efficiency of 96% for light compounds and 81% for heavy compounds in 14 days). In addition, bioremediation process reduced BOD (40.8%, 44.2 and 47.4%), COD (87%, 85% and 86%) and TOC (94%, 92% and 90%) in each of culture media at the end of period, respectively. Significantly, the growth parameters like biomass (0.3 mg in S3 on 14th day) rose as crude oil content increased, ($P < 0.01$), demonstrating that crude oil had a favorable impact on algal growth. This biodegradation process is remarkable in that it occurs in a continuous manner throughout time.

Key words: algae, biological purification, nutrient removal, oil wastewater, *Scenedesmus obliquus*

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