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Physicochemical and microbial characterization of olive mill wastewater (OMWW) from three different regions in Algeria

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PURPOSE OF THE ABSTRACT

OMWW resulting of the olive oil extraction, are releases that are a major environmental problem. OMWW have large polluting power because of their richness in organic matter, low pH, and high chemical and biological demands. The problems of OMW on the ecology are mainly caused by oil mills and strongly by traditional oil mills that discharge effluent directly into nature. The aim of this work is to evaluate the pollution generated by different kind of olive mills (traditional press with bottom feet, continuous and discontinuous processes) from three regions respectively (Ain-eldefla, Skikda and Medea) in Algeria.

The effect of OMWW was investigated by the characterization of this effluent such as BOD, COD, pH, organic matter, and compare the values obtained with the liquid effluent standards.

The main physicochemical characteristics of different OMWW are the low pH for all samples between 4.5 and 5.7, high conductivity, with a high concentration of organic matter with 70 gO₂.l⁻¹ of BOD₅ and COD of 155 gO₂.l⁻¹ for the sample of Ain-eldefla (traditional press) and respectively 15 gO₂.l⁻¹ and 20 gO₂.l⁻¹ of BOD₅, 326 gO₂.l⁻¹ and 345 gO₂.l⁻¹ of COD for samples of Skikda (continuous processes) and Medea (discontinuous processes). The microbial study of these OMWW revealed that contains a large microbial load of total coliforms and streptococcus for Ain-eldefla and Skikda samples and non-existence for the sample of Medea. Several other characteristics were conducted where the results of analyzes showed the high pollution load of the studied OMWW.

The obtained results of characterization showed that all samples of OMWW present a high pollution degrees compared to the liquid effluent standards of Algeria like COD, BOD and pH which allow to say that these effluents strongly affect soil and groundwater where they are rejected.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

OMWW | characterization | pollution | standards

BIBLIOGRAPHY