

Estimating the bioremediation of green table olive processing wastewater using a selected strain of *Aspergillus niger*

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ABSTRACT

Green table olive processing wastewater (TOPW) constitutes a notoriously polluting and difficult to treat wastewater, mainly due to its high polyphenol and organic content. This study reports on the laboratory development of an aerobic biological treatment method for TOPW, using a selected strain of *Aspergillus niger*. Two duplicated treatments from a single green table olive producing plant were examined in order to assess the bioremediation potential of the selected strain of *Aspergillus niger*. The wastewater arising from two different production processes was examined: (a) the typical debittering protocol, using dilute NaOH solution, and (b) an alternative protocol, using dilute KOH solution. Trials were carried out using cultures in flasks, and were monitored for changes in the pH values, electrical conductivity, oxygen uptake rate, chemical oxygen demand (COD), total solids, and total phenols, for 118 h. A total of 5 dilutions (100%, 85%, 70%, 55%, and 40%) of wastewater were inoculated with *Aspergillus niger*. The COD removal efficiency varied in the range of 60–87% and 50–87% for the NaOH and KOH treatment, respectively. Substituting NaOH with KOH seems a promising option, as the latter wastewater may be beneficially added to the soil after the step of the biological treatment.

Keywords: Wastewater; Table olives; Spanish type olives; Biological treatment; *Aspergillus niger*

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