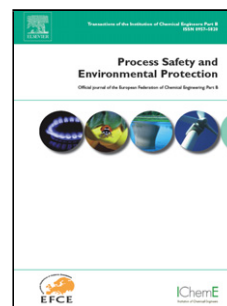


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# ABOUT TWO-PHASE OLIVE OIL WASHING WASTEWATER SIMULTANEOUS PHENOLS RECOVERY AND TREATMENT BY NANOFILTRATION

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## Highlights

- Treatment of wastewater produced in the mills to make the whole process sustainable. > Centrifugation was the most effective pretreatment in terms of TSS abatement and no phenolic compounds loss. > This pretreatment enhanced NF membrane flux (64.52 L/hm<sup>2</sup>) and EC + COD rejections. > A stream rich in phenolic compounds concentrated 8.33 times in volume was yielded. > A permeate practically free of phenolic content and COD reduced 86.76 % was obtained.

## Abstract

Olive oil industry is concerned to make the whole production process environmentally friendly, and this includes the treatment of the wastewater produced in the mills. In the present work, concentration and recovery of high-added value compounds (phenolic fraction) from two-phase olive-oil washing wastewater (OOWW) and the simultaneous treatment of the effluent by nanofiltration (NF) with a polymeric membrane was studied. Primarily, different pretreatments upstream the membrane unit were examined, adequating the effluent characteristics, that is, reducing the organic and inorganic concentration without compromising the phenolic content for its ulterior recovery. Among them, centrifugation was the most effective in terms of TSS abatement, no phenolic compounds loss, and subsequent highest EC and COD NF rejection. The availability of the centrifuges in the olive mills already, implying minimization of fix costs and needless of chemicals (flocculants), reinforces the proposed process. Moreover, this pretreatment enhanced the downstream stable membrane flux, up to 64.52 L/hm<sup>2</sup>,

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