

Evaluation of the estrogenic activity of sewage effluents submitted to advanced oxidative processes

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Wastewater can contain compounds with estrogenic activities, which are active even at low concentrations. Although wastewater is treated in Wastewater Treatment Plants (WWTPs), these substances are not always effectively removed. Advanced oxidative processes are promising in the treatment of effluents because they oxidize several contaminants and disinfect the final effluent. However, the oxidative processes can generate toxic compounds and metabolites. In this sense, bioassays are a crucial tool to evaluate the elimination of harmful substances to organisms before these effluents are reused or discarded into hydric bodies. Thus, this study aimed to assess the estrogenic potential of sewage samples before and after the treatment by advanced oxidative processes using the yeast estrogen screen (YES). Secondary effluents from two WWTPs of Limeira city with different characteristics were exposed to ozone or UV/H₂O₂ for periods of 20 (T1) and 40 (T2) minutes. The results showed that effluents *in natura* and after treated with UV/H₂O₂, in both periods, induced significant estrogenic activity in the most of collections. On the other hand, the samples treated with ozone did not show estrogenic potential. Therefore, this study revealed that the treatment performed with UV/H₂O₂ was not able to degrade estrogenic disrupting chemicals in the samples. In contrast, the treatment with ozone appears to be more efficient to degrade these substances, proving to be a valuable technology to be used for this purpose. So, we must consider the possible negative impacts that these substances may cause to the environment or human health. Moreover, the YES may be considered a very effective alternative *in vitro* method to easily detect estrogenic compounds in sewage.

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