

Combination of chemical and biological processes for the treatment of tannery effluent of Fez city in Morocco

Karima Elkarrach^{a,*}, Mohammed Merzouki^a, Omar Laidi^a, Anass Omor^b, Saloua Biyada^a, Mohamed Benlemlih^a

^aLaboratory of Biotechnology, Science Faculty of Dhar El Mahraz, Sidi Mohamed Ben Abdallah University, Fez, Morocco, Tel. +212 677 526492; email: karima-elkarrach@outlook.com (K. Elkarrach), Tel. +212 6 67 39 12 71; email: mohammed.merzouki@usmba.ac.ma (M. Merzouki), Tel. +212 6 66544908; email: omar.liadi@gmail.com (O. Laidi), Tel. +212 613021950; email: saloua.biyada@usmba.ac.ma (S. Biyada), Tel. +212 661761188; email: mohamed.benlemlih@usmba.ac.ma (M. Benlemlih)

^bLaboratory of Electrochemistry Engineering, Modeling and Environment, Science Faculty of Dhar El Mahraz, University of Sidi Mohamed Ben Abdallah, Fez, Morocco, Tel. +212 660093078; email: anass.omor@usmba.ac.ma

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ABSTRACT

Several tannery effluent treatments were studied, but there was no process that could remove the total pollution of these effluents. Besides, most of those processes are expensive. In this study, a promising coupled treatment of tannery effluents was performed to eliminate the entire pollution load of these toxic effluents. The treatment of these effluents was by precipitation using ferric chloride coupling with the sequencing batch reactor (SBR) process. For the SBR system, a daily cycle treatment and a high organic load of 1.5 kg of COD d⁻¹ m⁻³ were used. Concerning the results, this combined system provided very satisfactory outcomes, wherein removals were 99.89%, 99.98%, and 99.99%, respectively, for the chemical oxygen demand (COD), the sulfide ions, and the total chromium. Thus, the treated effluent is strongly conformed to the Moroccan standard of discharge. This result was not reached when these two systems were applied separately in previous studies. Therefore, this combined treatment can be an attractive and economic treatment for tannery effluent treatment.

Keywords: Tannery effluents; Toxicity; Coupled treatment; Precipitation; Ferric chloride; Sequencing batch reactor

* Corresponding author.