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Study on the influence of high salts content on fungal treatment of saline wastewaters

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ABSTRACT

We investigate in this study an assay of aerobic treatment of wastewaters from the sea-food processing industry with selected strains of white rot fungi. Because the effluent was highly charged with salts, the effect of high salts concentrations on growth and enzyme production for *Trametes trogii* and *Phanerochaete chrysosporium* was firstly studied. Results showed that the two selected strains tolerated high concentrations of NaCl up to 20 g l^{-1} for both mycelia growth and enzymes production. The production of laccase by *T. trogii* was inhibited by 50% for 30 g l^{-1} of added NaCl (512 mM). The enzyme production inhibition was less important for MnP and LiP produced by *P. chrysosporium*. On the other hand, the industrial wastewaters, not highly charged with organic matter (COD = 3 g l^{-1}), contained 25 g l^{-1} of salts and 0.3 g l^{-1} of ammonia. But the wastewaters were toxic according to microtoxicity and phytotoxicity tests since the percentage of bioluminescence inhibition of *Vibrio fischeri* (% BI) was 60% and the germination index of *Lepidium sativum* not exceeded 40%. The two strains grew on 80% of the effluent and the enzymes production was less than the enzymes production in the case of the control. This effluent concentration partially inhibited the COD removal efficiency but the strains were able to decrease the amount of organic matter contained up to 90%. Furthermore, the toxicity exhibited for the raw effluent was removed and the treated wastewaters by the two strains remained non toxic.

Keywords: *Phanerochaete chrysosporium*; *Trametes trogii*; Salts; Sea-food-processing; Wastewater treatment

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