Aspergillus niger is able to decolourize sepia ink contained in saline industrial wastewaters

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ABSTRACT

An isolated fungi Aspergillus niger was found to be an effective decolourizing agent for wastewaters containing ink of sepia under aerobic conditions. It was found that decolourization of sepia ink by A. niger biomass includes two important processes: biosorption and biodegradation. Results showed that the entire black colour was found to be strongly bioadsorbed to the settling spherical fungal biomass pellets of A. niger. An optimisation of decolourization conditions using A. niger was quite beneficial for colour removal. The study revealed that maximum biosorption using A. niger biomass was obtained after 24 h of culture in liquid synthetic media (LSM) containing glucose as carbon source (1 g/L), mineral elements, sepia ink (0.5 g/L) and pH between 4.0 and 5.0. The process of decolourization is concomitant with the growth phase of the fungus and has a necessary requirement for a biodegradable substrate such as glucose. The results showed the capacities of A. niger biomass to degrade 3 g/L sepia ink containing in LSM in 96 h in optimal conditions and colour removal reached 96%.

Keywords: Aspergillus niger; Treatment; Decolourization; Bisorption; Biodegradation

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