

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; Biosorption; Biodegradation

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