JWARP> Vol.2 No.1, January 2010

OPEN ACCESS

Colour Removal from Aqueous Solutions of the Reactive Azo Dye Remazol Black B Using the Immobilised Cells (Shewanella Strain J18 143) – Cellulose-g.co-Monomer System

PDF (Size:1065KB) PP. 77-84 DOI: 10.4236/jwarp.2010.21009

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ABSTRACT

Consideration is given here to colour removal, carried out using immobilised biological cells, Shewanella strain J18 143. In order to provide greater control of an overall colour removal process and to give a basis for the effective recovery of the cell culture species, cell immobilisation has been established on chemically modified cellulose. The modification was achieved by chemically inducing the graft copolymerisation of methacrylic acid onto cotton fabric. The immobilised cells were able to decolorise the dye. The immobilisation methods, physical adsorption, "growing-in" and chemical coupling, were compared. Each of the methods was effective to some extent. However, the latter two immobilisation methods provided the greater effect in decoloration. Each of these immobilised systems is relatively simple to achieve, whether by adsorption, physical interlocking or covalent coupling. The graft copolymer is able to offer versatility in use. The decoloration was shown to be rapid under relatively simple processing conditions. Thus, compared with the established controls, complete decoloration of solutions of Remazol Black B was observed. The potential use of the graft copolymer substrate as support for a biochemical agent was confirmed.

KEYWORDS

Reactive Azo Dyes, Colour Removal, Immobilisation, Immobilised Cells

Cite this paper

T. LI and J. GUTHRIE, "Colour Removal from Aqueous Solutions of the Reactive Azo Dye Remazol Black B Using the Immobilised Cells (Shewanella Strain J18 143) – Cellulose-g.co-Monomer System," *Journal of Water Resource and Protection*, Vol. 2 No. 1, 2010, pp. 77-84. doi: 10.4236/jwarp.2010.21009.

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