

ISOLATION AND SCREENING OF BACTERIA WITH ABILITY TO DECOLORIZE SELECTED SYNTHETIC DYES – PRELIMINARY RESULTS

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Abstract

Commonly used synthetic dyes cause serious problems with their efficient removal from sewage. The bioaugmentation of sewage treatment systems with highly decolorizing bacteria may be a solution. The aim of the study was the screening of bacteria with high ability to remove synthetic dyes (brilliant green (BG), crystal violet (CV), erythrosine (Er)). The bacteria were isolated from municipal sewage, compost and rotten beech wood. Mineral and nutrient solid growth media supplemented with dyes (BG or EB) at a concentration 0.1 gL^{-1} were used. At second stage of screening the liquid nutrient broth supplemented with one of dye (BG, CV or Er at concentration 0.1 gL^{-1}) was used. The contents of dyes in samples (after 96 h) were measured spectrophotometrically. The largest number of decolorizers were obtained from wastewater, then from compost and the rotten wood. In the case of BG and CV even small differences in the structure of the molecules affect the results of dyes removal. The structurally simpler BG was definitely better removed than CV. The results of the removal of Er were worse than BG but better than CV. Bacteria isolated at mineral medium removed dyes with higher efficiency.

Keywords: Bacteria; Brilliant green; Crystal violet; Decolorization; Erythrosine; Fluorone dyes; Triphenylmethane dyes; Screening; Synthetic dyes.