REMOVAL OF REACTIVE BLACK 5 BY *Trametes versicolor* IN A BATCH REACTOR

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Introduction. Azo dyes are broadly used in several industries because they offer many advantages, however a significant proportion of them is lost along the processing units and are released to the environment (3). Under anaerobic conditions azo dyes may be reduced into carcinogenic or mutagenic aromatic amines (1). The white rot fungi have shown to be able to mineralize azo dyes, however there is little information about the kinetic behavior of the microorganism for the removal of dyes.

The aim of this work was to estimate the kinetic parameters *T. versicolor* during removal of reactive black 5 (RB5) in a laboratory reactor.

Methods. *T. versicolor* pellets were produced in mineral medium with malt extract (2) and used to inoculate the reactor. Kinetics removal of dye was performed in a batch reactor containing 700 ml of Radha medium (4) containing 7 g/L of glucose and 50 ppm of hydrolyzed RB5 (2). The fungus behavior was monitored during 10 days incubating at room temperature and 200 rpm. Non- dye control was run under the same conditions. RB5 concentrations were measured photometrically at 597 nm. For qualitative information on change in the dye chemical structure, the complete spectrum of 200 – 700 nm was also scanned. Biomass production were measured by dry weight and reducing sugars evolution by DNS method.

Results. The growth of the fungus and glucose consumption patterns are shown in Fig.1a. The rate of glucose uptake diminished in the presence of RB5, shifting from 0.05 to 0.02 $gL^{-1}h^{-1}$. Removal of RB5 (FIG 1b) in the first 55 h can be attributed to an absorption of this on the biomass. In the following hours dye removal was accompanied by a change in the absorption spectrum of the medium (data not shown), that suggested the degradation of dye by *T. versicolor*. Kinetic parameters (Table 1) were estimated using the Logistic model with Microsoft Excel Solver.

Table 1. Kinetic parameters of growth of *T. versicolor*

	X_o	X_{max}	μ_{max} (h^{-1})
Non-dye control	0.34	0.44	0.02
RB5	0.13	0.27	0.03

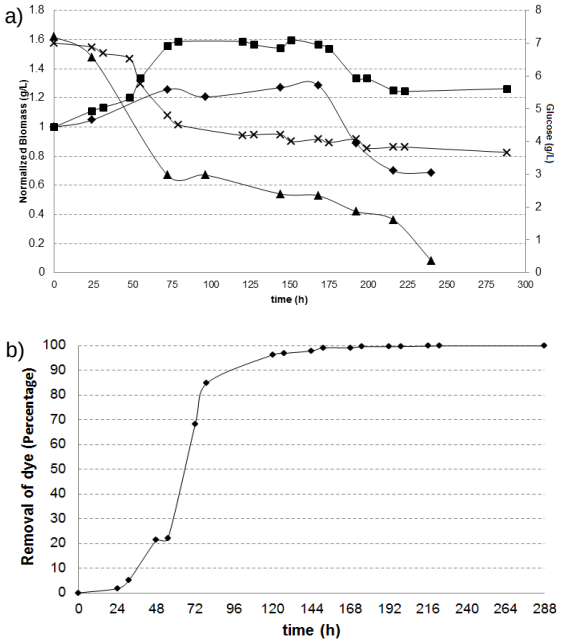

Fig.1 a) Glucose consumption with RB5 (-×-) and non-dye control (-▲-); biomass production without dye (-♦-) and RB5 NR5 (-■-). b) Removal of RB5 by *T. versicolor* in a batch reactor

Conclusions. The presence of dye in the medium affected the growth of the microorganism, but a 93% of biodegradation was obtained in the tested conditions.

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