



ABLE TO DECOLOURISE RBBR DYE

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★ WHAT

Ever more stringent environmental regulations have put increasing pressure on textile and pulp and paper mills to treat their effluents. Removal of contaminants is required to reduce the environmental impact before discharges and to allow the closing of water systems.

★ WHY

Effluents colour of pulp and paper and textile industries is mainly due to the presence of dyes and/or phenolic and polyphenolic compounds. Ligninolytic ability of some fungi (i.e. White Rot Fungi) makes them promising organisms to develop inocula for the biotreatment of these effluents.

★ HOW

After a screening program from samples of different origins, a fungal isolate tentatively named B33/3 was selected due to its good ability to decolourise Poly-R 478 and RBBR dyes. Its characterisation concerning taxonomic identification, kinetics of dyes decolourisation and determination of ligninolytic activity enzymes and is shown.

TAXONOMIC IDENTIFICATION

B33/3 grown on PDA for 7 days

B33/3 Clamp (100 X)

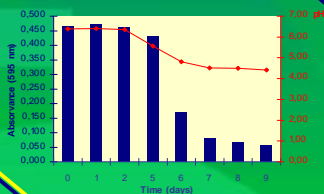
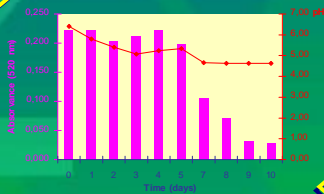
B33/3 carpophores grown on w. straw

B33/3 Spore

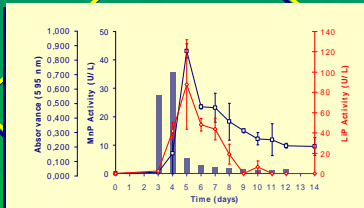
B33/3 micella grown on wheat straw

DECOLOURISATION

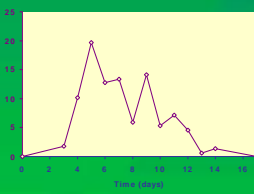
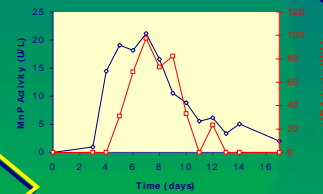
Kinetics of decolourisation of Poly-R 478 (0,02%), inoculum type "plug", CDBYE medium 30°C, 150 rpm agitation



Kinetics of decolourisation of RBBR (0,05%), inoculum type "plug", CDBYE medium, 30°C, 150 rpm agitation



Production of ligninolytic enzymes, inoculum type "plug", CDBYE medium, 30°C, 150 rpm agitation



LiP activity was determined by the veratrylic alcohol method, MnP activity by the MBTH/DMAB method and MIP activity by the DMP method.

ENZYMATIC CHARACTERISATION

CONCLUSIONS

B33/3 isolate clearly decolourises both Poly-R 478 and RBBR dyes with fast and effective decolourisation rates.

High levels of LiP, MnP and MIP activities were produced by this strain.

The taxonomic studies carried out led to the identification of the isolate belonging to the *Bjerkandera adusta* spp. A molecular biology study is now underway to provide a clearer evidence of the taxon.

The maximum rate of decolourisation of RBBR dye and the highest levels of LiP and MnP activities occurred simultaneously.

Our strain shows a good potential for effluents biotreatment due to the high ligninolytic activity and decolourisation ability observed.