

51. Fungal treatment of Kraft Black Liquor using *Phanerochaete chrysosporium* and *Aspergillus uvarum*

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The Kraft Black Liquor (KBL) generated by the pulp and paper industry is a highly alkaline effluent with high chemical oxygen demand (COD), toxicity, low biodegradability, and high concentration of phenolics. This work has been focused on the study of using the fungi *Aspergillus uvarum* and *Phanerochaete chrysosporium* to treat this pollutant effluent. Experiments were carried out at 25 °C and 150 rpm for 10 days in a batch reactor. The treatment was assayed with raw KBL and after removing the solids and different pH values were tested (4 and 6). Furthermore, experiments without pH control during the treatment were also carried out. The evolution of COD, BOD₅, colour index (CN), and the concentration of reducing sugars and phenolics was analysed in samples taken at different times of the biological treatment. Besides, the enzymatic activities manganese peroxidase (MnP), lignin peroxidase (LiP), and laccase (Lac) were measured. The treatment with *P. chrysosporium* gave removals of COD, colour index and phenolics of 65%, 37% and 56%, respectively, whereas *A. uvarum* achieved percentages of 61%, 81% and 67%, for the best conditions tested.

These results demonstrate the potential of both fungi for treating certain problematic industrial wastewaters, such as KBL. It is especially interesting the good data obtained with *A. uvarum*, which has not been previously assessed for the treatment of effluents from the paper industry.