PHENOL BIODEGRADATION IN THE MICROALGAE *MINUTOCELLUS POLYMORPHUS*

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Phenol and its derivatives, which are originated predominantly from anthropogenic sources, are widely distributed in nature. Many microbial strains have been isolated and studied in the degradation of phenol. However, most of the metabolic studies of aromatic degradation have been limited to bacteria and yeast. Nowadays there is an increased interest on the metabolism of organic pollutants by algae. In order to investigate this process cultures of *Minutocellus polymorphus* were initiated with $1x10^6$ cells ml^{-1} and exposed to 1.52mM of phenol. Samples were followed from day 0 to day 6 in triplicate flasks. The enzymes involved in the metabolism of phenol were investigated. The first enzyme was phenol hydroxylase, measured by consuming of specific cosubstrate, NADPH. This enzyme produced catechol, wich is further cleaved by catechol dioxygenase, producing muconic acid. We observed in our results an increase of the activity of these enzymes along the days. The metabolites of phenol such as catechol and muconic acid were identified by gas chromatograph coupled with a mass selective detector (GC-MS). In agreement with the enzymes, the muconic acid content showed an increase in day 6 when compared with day 0. Our findings indicate that *M. polymorphus* can metabolize phenol.

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