

Aerobic biotransformation of 2, 4, 6-trichlorophenol by *Penicillium chrysogenum* in aqueous batch culture: Degradation and residual phytotoxicity

Nicolás Aranciaga, Ignacio Durruty, Jorge F González and Erika A Wolski*

Grupo de Ingeniería Bioquímica, Fac. Ingeniería, Universidad Nacional de Mar del Plata, J.B. Justo 4302, 7600 Mar del Plata, Buenos Aires, Argentina

Abstract

2,4,6-trichlorophenol (TCP) is a toxic compound widespread in the environment, with numerous applications. There are many fungi capable of degrading it, although little attention has been paid to non wood-degrading species. *Penicillium chrysogenum* ERK1 was able to degrade 85% of TCP in batch cultures in the presence of sodium acetate. Degradation rate was fitted to a specific first-order kinetic and the growth rate was fitted to a Gompertz model. Hydroquinone and benzoquinone were identified as degradation intermediates. The phytotoxicity of the residues was reduced by half after fungal treatment. These results suggest that *Penicillium chrysogenum* can be applied successfully to biodegrade TCP.

Keywords: 2, 4, 6-trichlorophenol; *Penicillium chrysogenum*; biodegradation; phytotoxicity