Biodegradation of endocrine-disrupting phenolic compounds using laccase followed by activated sludge treatment

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Abstract

Endocrine-disrupting phenolic compounds in the water were degraded by laccase from *Trametes* sp. followed by activated sludge treatment. The effect of temperature on the degradation of phenolic compounds and the production of organic compounds were investigated using endocrine-disrupting chemicals such as bisphenol A, 2,4-dichlorophenol, and diethyl phthalate. Bisphenol A and 2,4-dichlorophenol disappeared completely after the laccase treatment, but no disappearance of diethyl phthalate was observed. The Michaelis-Menten type equation was proposed to represent the degradation rate of bisphenol A by the lacasse under various temperatures. After the laccase treatment of endocrine-disrupting chemicals, the activated sludge treatment was attempted and it could convert about 85 and 75% of organic compounds produced from bisphenol A and 2,4-dichlorophenol into H_2O and CO_2, respectively.

Keywords

activated sludgebiodegradationendocrine-disrupting chemicallaccasephenolic compoundwastewater treatment