

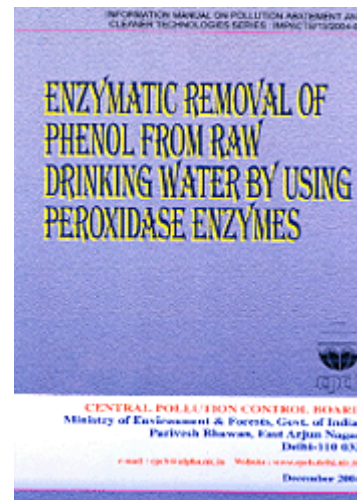
Enzymatic Removal of Phenol From Raw Drinking Water By Using Peroxidase Enzymes

Foreword

The sources of raw drinking water such as underground water, river and lake water, etc. could be contaminated with many toxic aromatic and aliphatic compounds and among these, phenol is the most common aromatic pollutant. It is carcinogenic and not easily biodegradable in the conventional water treatment plants. Hence, special efforts are required to remove such toxic aromatic compounds from drinking water by providing a polishing step in the water treatment plants. This can be done by chemical, microbiological or enzymatic means. But chemical methods, such as ozone treatment is costly and chlorine oxidation may give-rise to certain toxic chloro-organic compounds, which may be more dangerous than phenol itself.

Microbiological treatment of drinking water is not safe and it is normally not in common practice. Hence, enzymatic treatment is a new and good option to remove such trace toxic aromatics present in semi-treated drinking water sources, which are commonly used by the rural people in India and other developing countries. Peroxidase enzyme is nowadays used for the removal of toxic organic and recalcitrant compounds from drinking water sources as

well as from industrial effluents. Peroxidase is a versatile enzyme used for many industrial and clinical applications and it is present in many plants, vegetables and microbes. Peroxidases (from horse-radish, potato, onion, etc.) are normally cheaper compared to its production from microbes (such as rot-fungus). Presently, plant-peroxidases are used for many commercial applications. Here, an attempt has been made to see the efficiency of various types of plant-peroxidases for the removal of phenol from raw- drinking water sources in the first part of this work. It is hoped that the present study would be useful in the field of drinking water as well as wastewater treatments.



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