

***Bacillus megaterium*: A potential swimmer and an efficient bio-degrader of an organophosphorus pesticide**

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Agriculture sector is largely dependent on the use of synthetic agrochemicals (pesticides) for increasing the crops productivity and to protect it from pests. Chlorpyrifos is one of the globally and popularly exploited pesticides, but continuous and unethical use of it has become a major threat to soil contamination due to high soil adsorption coefficient, comparatively longer half life and persistence nature. The Diffusion chamber method targeted one of the bacterial strains from the soil samples of identified paddy growing field which showed significant growth and tolerance against higher ( $600 \text{ mgL}^{-1}$ ) concentration of Chlorpyrifos and having potency of its degradation. Morphological and molecular characterization identified the strain as *Bacillus megaterium*. Further, micro-capillary assay revealed Chlorpyrifos as chemo attractant for the *Bacillus megaterium* and chemotactic response was seen to be induced by both 600 and  $800 \text{ mgL}^{-1}$  concentrations of this pesticide. Moreover, the results of HPLC analysis pertaining to Chlorpyrifos degradation efficiency revealed that  $600 \text{ mgL}^{-1}$  of it is the most suited concentration for degradation by *Bacillus megaterium*, and about 81% of it was metabolized within 10 days of incubation. Concentration dependent decrease in peak area as well as emergence of new peak(s) was also observed which could be assumed as metabolites of this pesticide. Moreover, SDS-PAGE of the *Bacillus megaterium* cell lysate revealed appearance of new bands over the gel in response to Chlorpyrifos. Thus, overall study suggested that *Bacillus megaterium* could be well exploited for bioremediation of Chlorpyrifos contaminated sites.

**Biography**

Shweta N is pursuing her Ph.D from School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur, India. She is working as an environmental microbiologist and has expertise regarding isolation of the microbes using the modern cultivation approaches. She has been testing the microbes for biodegradation purpose of pesticides for achieving sustainability also testing the sensory response of bacteria. She has been working in this area for three years. Achievements of her include isolation of positive and responsive pollutant (especially pesticides) degrading bacteria. In relation to this, she has published one paper and others are in communication.

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