

Biodegradation of cypermethrin metabolites using terrestrial actinobacterium, *Streptomyces diastaticus* (PA2) and its GC-MS analysis

R. Janarthanan¹, V. Gopikrishnan², K. Kavitha³,
A. Murugan¹ and R. Balagurunathan^{3*}

¹Microbial Genomics Laboratory, Department of Microbiology, Periyar University, Periyar Palkalai Nagar, Salem, 636 011, Tamil Nadu, India.

²Centre for Drug Discovery and Development, Sathyabama University, Chennai 600 119, India

³Actinobacterial Research Laboratory, Department of Microbiology, Periyar University, Periyar Palkalai Nagar, Salem 636 011, Tamil Nadu, India.

Abstract : Pesticide contaminated soil and its remediation is considered as trivial and phenomenally affects of human life expectancy. Cypermethrin is a insecticide, act as a carcinogen and drivenly affect human reproductive system. Hence this study focuses the novel and environmental friendly bioremediation of cypermethrin contaminated soil by using actinobacteria. 8 potential strain of actinobacteria were isolated and screened from cypermethrin polluted jasmine garden soil and PA2 showed the good utilization of cypermethrin as the sole carbon and energy sources for growth against 100 mg of cypermethrin with optimized medium conditions at 28°C, pH 7.2, which was supported by UV-Spec and protein estimation. The growth curve experiment was performed at 20 -100 mg L⁻¹ dose of cypermethrin in the medium and found the viable count of *Streptomyces diastaticus* (PA2: UV-spectroscopy at 590 nm) is higher in 7th days. In addition, gas chromatography-mass spectrometry found the hydrolyses products such as benzaldehyde 3-phenoxy, lopropane carboxylic acid and 1-propanone 2, 2-dimethyl on 5th and 7th day respectively under the optimal conditions. The potential PA2 strain was identified as *Streptomyces* by morphological and *Streptomyces diastaticus* by molecular. This study gives the novel and potential strain PA2 for approximately 92-96% of bioremediation of cypermethrin polluted soil within 7days with 0.1ml of inoculum as a source. The PA2 will be a good alternative for biodegradation of toxic compounds and pollutants in our world.

Keywords : Biodegradation; Cypermethrin; GC-MS; *Streptomyces diastaticus*.

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