Isolation of Fenobucarb Resistant Bacteria from Agricultural Soils in Belihuloya, Sri Lanka

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Pesticides are extensively used in controlling pests globally as well as in Sri Lanka, and many of these pesticidal compounds are nuisances of the natural ecosystem. But, some soil microbes immensely help in biodegrading the pesticide residues, enabling the pesticides to be less harmful. Fenobucarb is one of the extensively used carbamate insecticides in Sri Lanka. The objective of this study was to isolate resistant soil bacteria against Fenobucarb in agricultural soils. Three pooled soil samples were collected from three selected farming lands located in *the Belihuloya* area where Fenobucarb is used continuously in crop cycles. Each sample was grown on M9 minimal salt medium supplemented with 100 ppm Fenobucarb at 28 °C for 2-3 days. Seven well-grown single colonies were isolated and subcultured on the same medium supplemented with 100, 150, 200, 300 ppm Fenobucarb separately. Four out of the seven isolates were able to grow in all the concentrations of the pesticide. From the other three isolates, one was able to grow in 100 and 150 ppm while the other two showed their growth only in 100 ppm concentration of the pesticide. One out of four isolates that grew in all the pesticide concentrations didn't show any growth on control (M9 minimal salt medium without the pesticide). One out of two isolates that grew only in 100 ppm concentration also did not show any growth in control. However, the other five isolates exhibited very small colonies on control as well. These results support the fact that some soil bacteria can utilize pesticides as their sole carbon source. According to the above results, the study concludes that some isolated soil bacteria can resist up to the concentration of 300 ppm Fenobucarb being potential bioremediation agents for decontaminating the polluted sites.

Keywords: Fenobucarb, Bioremediation, Soil Bacteria, M9 minimal salt medium

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