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Isolation and characterization of *Bacillus thuringiensis* strains from two selected sites in Gampola and Nochchiyagama

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The protein toxins produced by *Bacillus thuringiensis* are the most widely used natural insecticides in vector control and for pest control in agriculture. *Bacillus thuringiensis* strains were isolated from surface and sub-surface soil samples collected from Gampola and Nochchiyagama and compared with a control soil sample from the Institute of Fundamental Studies premises in Kandy. *Bacillus thuringiensis* was isolated by 0.25M sodium acetate selection method. Isolated *Bacillus thuringiensis* was grown on Luria Bertani agar medium and stained by Gram staining procedures. Eighty isolates of *Bacillus thuringiensis* were identified by Coomassie Blue staining procedure and characterized based on colony morphology, crystal shape and plasmid profile.

Results revealed that sub-surface samples had more *Bacillus thuringiensis* counts than surface soils. This study also showed that *Bacillus thuringiensis* was highly abundant in soils contaminated with animal wastes. All the isolates formed 'pan cake' like circular colonies with smooth or serrate margins with varying diameter. 91.25% of isolates were found to have rod shape crystals, 7.5% were spherical shape and only one isolate had rhomboidal shape. Isolates from Gampola soil had four different *Bacillus thuringiensis* strains and of these isolates, 82.14% was *Bacillus thuringiensis israelensis*. There were nine different *Bacillus thuringiensis* strains in the isolates from Nochchiyagama sample and 51.21% of these were Bacillus *thuringiensis israelensis*. However, control sample collected from Institute of Fundamental Studies premises also had two different *Bacillus thuringiensis* strains of which 36.36% were *Bacillus thuringiensis israelensis*. There was large number of different *Bacillus thuringiensis* strains available in dry zone soils than in wet zone.

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