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Intraspecific variations and phylogenetic relationships among heat tolerant strains of *Steinernema siamkayai* (Rhabditida: Steinernematidae) from Pakistan

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Abstract

The genetic diversity and phylogenetic intraspecific relationship among thirty heat tolerant strains of *Steinernema siamkayai* from Pakistan were investigated during summer season. DNA fragment lengths of amplified ITS region obtained from eighteen *Steinernema* strains ranged from 742 to 1009 bp (182 bp nucleotide difference). There were high intraspecific variations among the Pakistani strains detected from different regions of Pakistan 0.01 to 0.09 %. However, the fragment length of twelve strains of amplified 12S rDNA gene ranged from 500 to 594 bp. The intraspecific variation of the sequences ranged from 0.02 to 0.07 % (94 bp nucleotide difference). Phylogenetic relationships based on both molecular makers ITS rDNA and 12S rDNA gene was constructed by using Bayesian Interference (BI) and Maximum Parsimony (MP) tree. Both the rDNA ITS1 and 12S rDNA genes sequences are useful for resolving relationships among *S. siamkayai* strains. The highest survival rate for heat tolerance was observed in PAK.S.*S*.38 (5600±5.5 IJs/ml) at 39.5 °C. In *Galleria mellonella*, the mortality % was 100±2.8 in PAK.S.*S*.58 and the reproduction rate was 1018.8±5.5 (IJs/mg larvae) in PAK.S.*S*.38 strain. The mortality % and reproduction rate was found maximum in PAK.P.*S*.80 of *Planococcus ficus* (95.74±2.8; 223.3±2.8 IJs/mg larvae).