Genetic polymorphism by RAPD-PCR and phenotypic characteristics of isolated thermotolerant Bacillus strains from hot spring sources.

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Abstract

The polymerase chain reaction (PCR) based random amplified polymorphic DNA (RAPD) assay, morphological, physiological, biochemical and antimicrobial susceptibility test methods have been evaluated for use in the taxonomy of isolated thermotolerant Bacillus from Jordanian hot springs, with specific reference to strains Geobacillus stearothermophilus (ATCC 12980), Bacillus circulans (ATCC 4513) and Bacillus sphaericus (ATCC 14577). A RAPD assay has been optimized and is able to discriminate between numerous thermotolerant Bacillus strains. RAPD-PCR was found to give reproducible thermotolerant Bacillus strains classification of DNA fingerprints for 14 strains including 3 reference strains. A study of 14 isolates and 3 reference strains, analyzing 53 phenotypic characters, resulted in their allocation to five major clusters at 60% similarity. Whereas at 80% similarity, twelve taxonomically distinct groups were evident.