عنوان مقاله:

Application of Random Amplified Polymorphic DNA (RAPD) to Detect the Genotoxic Effect of Cadmium on Tow (Iranian Ecotypes of cumin (Cuminum cyminum

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نویسندگان:

Soraya Salarizadeh - *Department of Plant Biotechnology, College of Agriculture, Shahid Bahonar University of Kerman, Kerman, Iran*

Hamid Reza Kavousi - *Department of Plant Biotechnology, College of Agriculture, Shahid Bahonar University of Kerman, Kerman, Iran*

خلاصه مقاله:

Cadmium, a metal widely used in industrial processes, has been recognized to be a highly toxic and dangerous environmental pollutant. Random amplified polymorphic DNA (RAPD) test is a feasible method to evaluate thetoxicity of environmental pollutants on vegetal organisms. Herein, two Iranian ecotypes of Cuminum cyminum(cumin) plantlets following exposure to cadmium (Cd) concentrations of 300–1050 μM for 7 days were screenedfor DNA genetic alterations by DNA fingerprinting. 10 RAPD primers of 50–70% GC content were found to produce unique polymorphic band profiles on treating cumin seedlings. After Cd treatment, significant changes were observed in RAPD profiles of both ecotypes. These changes included variation in band intensity,disappearance of bands, and appearance of new PCR products in comparison to the control group, and they were dose dependent. These results indicated that genomic template stability (GTS, a qualitative measure reflecting changes in RAPD profiles) was significantly affected at the above Cd concentrations. The GTS index in both ecotypes gradually decreased with an increase in Cd concentrations. These findings suggest that DNApolymorphism detected by RAPD analysis could be a powerful eco-toxicological tool to evaluate the genotoxic effects of cadmium on plants

کلمات کلیدی:

Cadmium (Cd), Genomic Template Stability, RAPD, Genotoxicity, Cuminum cyminum