University of Zabol
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Department of Plant Breeding and Biotechnology

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(In The Field of Agricultural Biotechnology)

Title:
Investigation of Genetic Diversity in Sistan Grapes using Microsatellite Molecular Markers

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Abstract

In order to investigate the genetic diversity among Sistan grapes, genomic DNA were analyzed by SSR-PCR using microsatellite markers. The studied genotypes were varieties collected in Zabol Agricultural Research Center, from which leaf samples were collected and kept in -80°C. Thirty five samples were analyzed with twelve microsatellite markers, and the PCR results were visualized on polyacrylamide gel. The presence/absence of the PCR products were scored as a binary data matrix, used for further analysis. From the 12 SSR markers used, four were found monomorphic; and the remnant eight primers produced 51 alleles.

The number of alleles per locus varied from 5 to 8, with an average of 6.37. The expected heterozygosity varied between 0.6915 and 0.8658 and the observed heterozygosity was higher than 0.88 indicating that the SSR markers were highly informative. Polymorphism information content (PIC) varied from 0.685 to 0.852, with an average of 0.77. Cluster analysis based on molecular markers was performed using UPGMA method and Jaccard's similarity coefficients. Principal coordinates analysis revealed seven factors justifies 46% of data variations. Mantel test result confirmed the dendrogram with similarity matrices, r =0.8. Cluster analysis was performed using Darwin method and 1000 bootstraps and the samples were divided into three major groups. The similarity between different genotypes based on the resulted and its scope for the future studies were discussed.

Keywords: Grape, Genetic Diversity, Molecular Markers, Microsatellite