

Abstract

Radish (*Raphanus sativus* L) is a plant belongs to *Brassicaceae* family and It has been domesticated in the eastern Mediterranean area then has been spread to the East Asia and the Europe. This plant has been used to treat stomach disorders, liver diseases, treatment of gout and rheumatism. In this study to evaluate genetic diversity of the radish varieties, Inter-retrotransposon amplified polymorphism markers (IRAP) were used. The seeds of seven different geographical regions, including Iran (2 cultivars), Netherlands (2 cultivars), Italy, Denmark and America were used after planting. DNA extraction method was performed by Dellaporta. 10 SRAP markers were designed and used. Then, electrophoresis was performed by agarose gel and staining performed by GelRed. The data was analyzed using NTSYS pc, Genalex, Darwin and Mega softwares. In total 111 bands were identified that primer pairs LTR 2 , 15 with one allele and single primer Sukkula and 3'LTR with 3 alleles and single primer LTR 23 with 16 alleles and primer pairs LTR 2 , 3 with 14 alleles had minimum and maximum number of alleles produced by each primer, respectively. LTR 23 and LTR 2 , 3 markers were the most effective primers. The average number of alleles in the total locus and the average genetic diversity were equals to 6.9375 and 0.9175, respectively. The highest similarity (0.896) was related to the Profit and indigenous Dorcheh and the lowest similarity (0.632) was related to Profit and French breakfast with an observed average of 0.814. The different cultivars of Radish based on Seed-producing countries were classified into two different groups. By comparing the genetic diversity obtained using this method, it was found that IRAP method showed a greater diversity ($r = 0.99$) than other methods which have already done on the radish. It also differentiated the cultivars of the radish in a more effective and better way. Respectively the cultivars of Profit (0.82) and Vikima (0.86) had more diversity than other cultivars. The source or the first origin of the plants belongs to the centers that have the greatest diversity. Therefore, it is necessary to pay more attention to geographical areas of Italy and Denmark in collecting the germplasm of the radish.

Key Words: *Raphanus Sativus* L, Genetic Similarity, Genetic Variation, IRAP Marker



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**Assessment of genetic diversity of several radish
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