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Surveying the relationship between grapevines subspecies of *Sylvestris* and Rosheh variety

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ABSTRACT

Grapevines are recognized as the ancestors of current cultivated grapes. This study was conducted in order to survey the relationship between grapevines subspecies of *Sylvestris* and cultivated variety of Rosheh in the woody regions of Pardanan of Piranshahr city and Qasem Rash of Sardasht city in West Azebiajan, Iran. In Pardanan, 8 genotypes of grapevines in addition to 8 genotypes of grapevines in Qasem Rash along with Rosheh variety were selected and numerous morphological traits in the different phonological stages of this vinery were studied. Based on cluster analysis, all genotypes of grapevine as well as cultivated variety of Rosheh were classified into three groups. The first group includes only PR1; i.e. the first genotype of Pardanan and the second group contains 15 genotypes including all genotypes of Sardasht and 7 genotypes of Piranshahr, and the third group only includes cultivated variety of Rosheh. In this classification, full similarity among GH7 & GH5, GH3, and GH6, & PR8, PR3 and PR4, PR5 & PR8 was obtained. Cultivated variety of Rosheh demonstrated too slight similarity with grapevines studied.

Keywords: Grapevines; Morphological Traits; Cluster Analysis.

INTRODUCTION

Grape is a plant from Ampolidaceae or Vitaceae family which has at least 14 genuses and about 700 species [5]. The fruits in *Vitis* genus are only edible[3]. Grapevines subspecies of *Sylvestris* are considered as the ancestors of cultivated varieties of grapes, some populations of which are distributed in the jungles around Piranshahr and Sardasht cities in West Azebiajan province. Examining the genetic relationship of these genotypes with cultivated varieties of the region and assessing them are very important from the viewpoints of important faming traits, resistance against living and non-living factors in order to utilize the resultants as genitors in the improvement programs and maintain them[4,6].

MATERIALS AND METHODS

During April-May, 2008, growing place of grapevine was recognized through repeated visits of jungles and humid places of Piranshahr and Sardasht and examining different zones. Based on the safety status of roads and the number of wild bushes, two woody places were selected in kilometer 28 of Pianshar on the main road of Piranshahr and Sardasht and Qasem Rash region at Iraqi borderline. Then, bushes of grapevine were selected, number-assigned, and indicated by dye-spraying. In Pardanan, eight genotypes of grapevine by PR₁, PR₂, ... , PR₈ codes and in Qasem Rash, also, eight genotypes of grapevine by GH₁, GH₂, ... , GH₈ codes were surveyed. Then, numerous traits were measured and recorded in different phenological (the study of the influence of the climate on cyclical phenomena in plants and animals) stages of bushes based taxonomy of World Genes Bank until September-October 2009. In this research, in order to survey the similarity and relationship between grapevine and current cultivated grapes, the old and commercially available variety of Rasheh (Sardasht Black) also was used, and all measured traits in cultivated variety of Rasheh were measured and recorded as the genotypes of grapevine's, too.

RESULTS AND DISCUSSION

Grapevines are subspecies of *Sylvestris Vitis Vinifera* Spp. often grow in wet settings and at the riversides. They need a protector to climb in order to develop and produce fruits, which mainly depend on their prehearing trees as protector. One of their other characteristics of this genotype is that it is a polygamous plant.

Frequency of Morphological Traits

All genotypes have open apical development point.

Congestion of lying fuzzes on all examined parts of the genotypes is high.

The color of the surface of leaves and the color of dorsal and frontal parts of nodes and internodes in most genotypes are green.

Number of the lobes of the leaves in most genotypes is three.

The size of lamina in most genotypes is small.

Lateral indentation of the mature leaves in most genotypes has a smooth and convexly shape.

The results of pollen germination

The results of pollen germination showed that the pollen of the male genotypes had well-germinated while the females' pollen had no germination ability.

Total results of pests, diseases and stresses

Considering the examinations conducted on the genotypes studied and ELISA test, it has indicated that the above cited genotypes are resistant against environmental pests, diseases and stresses to a large extent, and have developed compatibility with their environment and are well-grown.

Among the studies coefficients, dendrogram yielded from UPGMA algorithm provided the most suitable grouping using Jacard distance coefficient. The dendrogram sections/cuttings of dendrogram at the interval of groups, the genotypes of grapevines studied and cultivated variety of Rasheh are in three groups.

The first group only includes PR₁ genotype. The second group: in this group, 15 genotypes of grapevine were surveyed including all genotypes of Qasem Rash and 7 genotypes of Pardanan. In this group, GH₆ and GH₇ that have a close similarity with each other were placed in one group. In addition, GH₃ and GH₅ together with the genotype PR₈ of grapevine showing a close similarity were placed together. In the second group, PR₇ and PR₅ together have much similarity. Interestingly, 4th genotype of Qasem Rash (GH₄) and (PR₂) were put in one group despite their far distance, they are too alike. PR₆ shows less similarity with the other genotypes in this group.

The third group: this only includes cultivated variety of Rosheh that is the dominant variety in the region and was separated from the genotypes of grapevines. This is mostly because of the lack of morphological similarity between the genotypes of grapevines and cultivated variety of Rosheh in this region. Dowlati *et al.* based on micro-satellite chloroplastic studies, reported that variety of Rasheh and the genotypes studied have a common haploid-type, but based on the nuclear micro-satellite results, they reported that there is no genetic similarity between the genotypes of grapevines and cultivated variety of Rasheh in this region, which in a strong agreement with our research[1,2].

It seems that Rasheh variety might have had its orientation from either other genotypes from another place and got domesticated and been brought to this region, or the ancestors of these current genotypes of grapevines now here, which had been disappeared, or the other genotypes in this region which have not yet been studied by this research (Diagram I).

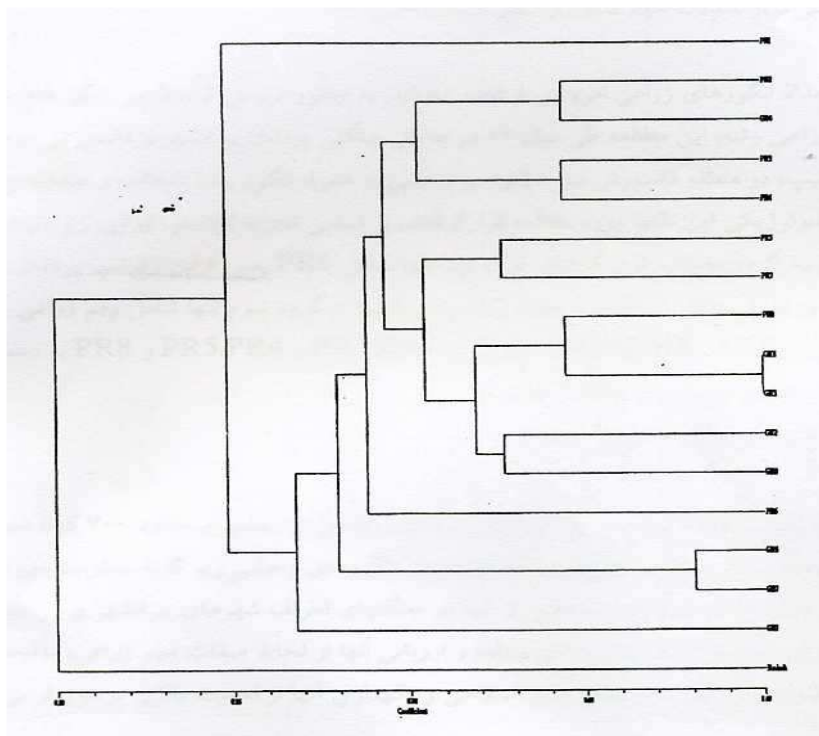


Diagram I- grouping the genotypes of grapevines studied using morphological seeds based on UPGMA algorithm & Jaccard coefficient

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