

Determination of Genetic Differences among *Salvia fruticosa* Mill. Populations from Muğla Turkey

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Aim of the study: Biotechnological and molecular studies are important in conservation of endemic, rare and/or endangered species. The genus *Salvia* have numerous of pharmaceutical secondary metabolites. Due to relatively high essential oil content of *Salvia fruticosa* present in Turkey's western coast and its exports from Turkey makes this species economically important for our country. Furthermore, *S. fruticosa* is endemic to Eastern Mediterranean. Determination of genetic differences using various molecular markers is important in terms of their use in breeding studies that potentially lead to creating superior genotypes. The aim of this study is to determine intraspecific genetic differences using RAPD analysis among the *S. fruticosa* populations from Muğla.

Material and Methods: In this study, *S. fruticosa* seeds have been collected from five different locations in Muğla; Datça, Ortaca, Marmaris, Gökova and Bodrum. DNA isolations were carried out from the leaves of the sterile seedlings grown from seeds that were germinated in vitro. Intraspecific genetic distances among the samples from different locations were analyzed using the results obtained from 12 oligonucleotide primers. Finally a dendrogram illustrating the genetic distances among the plant samples were constructed to show the genetic relationship.

Results: A very high degree of polymorphisms (93.49%) were detected as a result of the studies conducted with 12 selected RAPD primers among the 11 seedlings that were analyzed. A total of 169 scorable bands were obtained. Size ranges of the scored bands were from 4000 bp (OPB-04) to 300 bp (OPB-08). OPB-02 primer produced the most bands and OPB-05 produced the least bands (21 bands and 8 bands, respectively). According to the distance values that were assessed by using PopGene software; the lowest difference value was between the two samples from Bodrum (0.2395), hence identified as the closest samples and the highest difference value was between the samples from Datça and Bodrum (0.6640) and these samples were identified the most distantly related samples. The studies concerning molecular analysis of *S. fruticosa* species are relatively limited in the literature. The results of this study provide the preliminary information regarding genetic profiles of *S. fruticosa* populations found in natural flora of Muğla and can be used as a basis for future molecular studies with these populations.

Acknowledgements: This study is supported by the Muğla Sıtkı Koçman University Scientific Research Projects Coordination Office through Project Grant Number 15/163 (this presentation is a part of 15/163 thesis project).

Keywords: *Salvia fruticosa*, genetic difference, molecular markers, RAPD-PCR.