Seed storage protein profile of some vetch species (Vicia L.) grown in Turkey using SDS-PAGE

Emine Arslan¹, Kuddisi Ertuğrul¹, Hüseyin Dural¹, Ahmet Tamkoç²

¹Department of Biology, Faculty of Science, Selçuk University, 42075 Konya-Turkey (earslan@selcuk.edu.tr)
²Department of Field Crops, Faculty of Agriculture, Selçuk University, 42075 Konya-Turkey

Summary

Total seed storage proteins were analyzed in seven common vetch cultivars and 40 accessions belonging to 28 Vicia taxa naturally collected from Turkey. In this study, SDS-PAGE method was performed both inter and intra-specifically to determine the genetic relationships and in order to facilitate genotype selection in breeding programs of Vicia taxa.

Genetic similarity among accessions of polypeptide patterns ranging from 18 kDa to 128 kDa were calculated according to Nei homology using Bio1D++ computer program. The dendrogram was obtained with UPGMA clustering method with individual electrophoregrams of the taxa. According to similarity coefficients, 47 Vicia accessions were formed in two main clusters with similarity rate 51%. While Grup I included accessions of section Vicia, section Faba and section Cracca, Grup II consisted of only members of section Ervum. It was found out that taxa of section Faba were very close to section Vicia (~70%) in Grup I. Taxa of section Cracca were separated from these sections with similarity rate 58%.

It was concluded that seed storage protein profiles could be useful markers in the studies of genetic diversity and genetic relationships of Vicia taxa. In addition, this classification can be useful to determine the correct starting material for plant breeding.

Key word: Vicia, SDS-PAGE, genetic relation, total proteins