GENETIC DISCRIMINATION OF GRAPE BUD SPORTS AUTOCHTHONUS IN THE CARPATHIAN BASIN

ANTAL SZŐKE – ESZTER FARKAS –KITTI A. LENCSÉS –ANIKÓ VERES - ERZSÉBET KISS

Institute of Genetics and Biotechnology, Faculty of Agricultural and Environmental Sciences, Szent István University, Gödöllő, Páter K. u. 1. H-2100, e-mail: Kiss.Erzsebet@mkk.szie.hu

Recently, over several thousand years of viticulture, as a result of mutation, natural hybridizations and – from the 19th century – deliberate crosses and selection numerous grape cultivars have been evolved. The conservation of genetic resources and cultivation of varieties require accurate characterization of the different genotypes. This characterization is based on morphological description and molecular, first of all, microsatellite (SSR) fingerprinting. Both in the European and Hungarian collections can be found cultivars sharing identical SSR fingerprints which differ only in berry colour. These cultivar groups were named by Márton Németh as conculta. Such concultas consist of cultivars with different berry colour: white, red, blue, pink, black and grey.

Based on our SSR fingerprinting results six concultas could be differentiated among one hundred cultivars autochtonous in the Carpathian Basin: 'Bakator' (piros and tüdőszínű), 'Lisztes' (fehér and piros), 'Gohér' (fehér, piros and változó), 'Furmint' (fehér, piros and változó), 'Muskotály' (piros, fekete, fehér and csíkos), Barátcsuha (kék and szürke). Obviously, within each conculta these are derivatives, bud sports of the same cultivar therefore they are genetically very similar.

The berry colour is determined by anthocyanins accumulating in the skin. Anthocyanin biosynthesis is controlled by different regulatory elements and transcriptional factors belonging to *Myb*-related genes. Several such *Myb* genes and different allele variants were identified in grapes. Based on the allele variants cultivars can be classified into haplotypes. White berried grapes do not contain anthocyanins in the skin, because either a *Gret-1* retrotransposon is inserted into the promoter region of *VvMybA1* gene or nucleotide mutations occurred in the *VvMybA2* gene regulating the anthocyanin biosynthesis. The ancient grape had coloured berries and most of the white cultivars derived from the coloured ones.

Based on the genetic variation in *VvMybA1* locus, the berry colour variants within the 'Lisztes', 'Furmint', 'Barátcsuha' and 'Muskotály' concultas were successfully discriminated. We also concluded that the 'Lisztes piros', 'Furmint piros' and 'Piros muskotály' derived from the white cultivars. In the case of 'Bakator', 'Gohér' concultas it is assumed that there are other genetic causes of the different berry colours. To prove this hypothesis other gene sequences and regulating elements responsible for steps of anthocyanin biosynthesis were investigated.

Research is supported by Antal Szőke's Magyary Zoltán Postdoctoral fellowship and the TÁMOP-4.2.2.B-10/1 „Development of a complex educational assistance/support system for talented students and prospective researchers at the Szent István University" project.