EFFICIENCY OF MICROSATELLITE MARKERS IN GENOTYPING OF *OROBANCHE CUMANA* POPULATIONS

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Abstract

Microsatellite (SSR) markers have been accepted and employed as useful tools for measuring genetic diversity and divergence within and among populations. In this study, the utility of 15 SSR markers in discrimination of 33 *Orobanche cumana* (broomrape) populations from different geographical locations (Moldova, Romania, Bulgaria, Serbia, Turkey, China) was assessed. A total of 279 *O. cumana* plants were genotyped and 110 alleles identified. The level of genetic polymorphism of SSR markers was evaluated by calculating the *effective number of alleles per locus* (Ne), which demonstrated an average of 5.243, *Polymorphic Information Content* index (PIC: 0.745), *Nei's genetic diversity* (H: 0.782) and, *Resolving power* (Rp: 5.794). Most markers showed PIC values higher than 0.5, indicating a big genetic polymorphism in *O. cumana* populations. Based on the Rp index and PIC values, genetic diversity in the broomrape populations from Turkey (Rp: 4.774, PIC: 0.722) and Moldova (Rp: 4.394, PIC: 0.716) was higer than in other populations. However, the studied microsatellite markers system characterized very well the genetic structure of all *O. cumana* populations included in this study. Seven SSR markers (Ocum-052, Ocum-059, Ocum-074, Ocum-081, Ocum-087, Ocum-196, Ocum-197) were selected based on the statistical analysis as the most informative and efficient markers for measuring genetic diversity in *O. cumana*.

Key words: *SSR markers, genetic polymorphism, genotyping, population, Orobanche Cumana*