

Plant Genomics

July 14-15, 2016 Brisbane, Australia

Phylogenetic analysis of genera *Bellevalia*, *Leopoldia*, *Muscari* and *Pseudomuscari* species (Hyacinthaceae) in Iran based on four plastid DNA regions

Azarnoosh Jafari¹, Jamil Vaezi², Mohammad Mahdi Forghanifard³, Mohammad Farsi⁴, Maryam Behroozian² and Felix Forest⁵¹Islamic Azad University, Mashhad, Iran²Ferdowsi university of Mashhad, Mashhad, Iran³Damghan Branch, Islamic Azad University, Damghan, Iran⁴Ferdowsi university of Mashhad, Mashhad, Iran⁵Royal Botanic Gardens, Kew, UK

In the present research, a phylogenetic study of the Iranian species of *Bellevalia*, *Leopoldia*, *Muscari* and *Pseudomuscari* (tribe Hyacinthaceae, Asparagaceae) was performed based on the plastid regions *rbcL*, *matK*, *trnL* intron and *trnL-F* spacer. The four sections of genus *Bellevalia* i.e. *Nutans*, *Patens*, *Conica* and *Oxydonta* are found in Iran. Traditionally, flower colour and shape, the ratio of leaf to scape length were used to delimit sections, subsections and species, while an overlap in these features was sometime observed and flower color and shape change in fresh and dried specimen. Regarding *Muscari*, Davis and Stuart believed that *Pseudomuscari* and *Leopoldia* were subgenera of this genus while Garbari and Greuter treated them as distinct genera. These three genera are distinguished based on flower color, shape and throat contraction. *Leopoldia* is similar to *Bellevalia* and *Muscari* is similar to *Pseudomuscari*. So, in order to determine the exact circumscription of sections and genera, a phylogenetic analysis based on four plastid DNA regions was performed. For this 91 specimens including *Hyacinthus* as out group taxon were evaluated. The results showed that *Bellevalia* is a monophyletic clade but that its sections are not. Also, some *Leopoldia* species are placed in the *Muscari* clade. Moreover the two possible positions of *Muscari* and *Leopoldia* shown here can be explained by hybridization between these two genera. Thus, based on these results, *Leopoldia* could be considered as an infrageneric rank of *Muscari*. Since, no decisive point was observed in genera and sections circumscription, it is recommended that this molecular analysis is expanded to investigate further the relationships among species of Hyacinthaceae in Iran.

Biography

Azarnoosh Jafari has completed her PhD in 2004 from Research and Sciences of Tehran Branch, Islamic Azad University. She is the Director of the project and she has published more than 50 papers in English and Persian.

Azarnoosh_djafari@mshdiau.ac.ir

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