



# Genetic diversity and phylogenetic relationship among Tunisian cactus species (*Opuntia*) as revealed by random amplified microsatellite polymorphism markers

M. Bendhifi Zarroug<sup>1,2</sup>, G. Baraket<sup>1</sup>, L. Zourgui<sup>2</sup>, S. Soudi<sup>2</sup> and A. Salhi Hannachi<sup>1</sup>

<sup>1</sup>Laboratory of Molecular Genetics, Immunology & Biotechnology, Faculty of Sciences of Tunis, Campus University, University of Tunis El Manar, Tunis, Tunisia

<sup>2</sup>Research Unit of Macromolecular Biochemistry and Genetics, Faculty of Sciences of Gafsa, Gafsa, Tunisia

Corresponding author: A. Salhi Hannachi  
E-mail: Amel.SalhiHannachi@fsb.rnu.tn

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**ABSTRACT.** *Opuntia ficus indica* is one of the most economically important species in the Cactaceae family. Increased interest in this crop stems from its potential contribution to agricultural diversification, application in the exploitation of marginal lands, and utility as additional income sources for farmers. In Tunisia, *O. ficus indica* has been affected by drastic genetic erosion resulting from biotic and abiotic stresses. Thus, it is imperative to identify and preserve this germplasm. In this study, we focused on the use of random amplified microsatellite polymorphisms to assess genetic diversity among 25 representatives of Tunisian *Opuntia* species maintained in the collection of the National Institute of Agronomic Research of Tunisia. Seventy-two DNA markers were screened to discriminate accessions using 16 successful primer

combinations. The high percentage of polymorphic band (100%), the resolving power value (5.68), the polymorphic information content (0.94), and the marker index (7.2) demonstrated the efficiency of the primers tested. Therefore, appropriate cluster analysis used in this study illustrated a divergence among the cultivars studied and exhibited continuous variation that occurred independently of geographic origin. *O. ficus indica* accessions did not cluster separately from the other cactus pear species, indicating that their current taxonomical classifications are not well aligned with their genetic variability or locality of origin.

**Key words:** Cluster analysis; Molecular markers; Polymorphism; *Opuntia* germplasm; Random amplified polymorphic DNA; Tunisian collection