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Genetic diversity of spineless *Cereus jamacaru* accessions using morphological and molecular markers

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ABSTRACT. This is the first study to examine the genetic diversity of mandacaru cactus (*Cereus jamacaru* P. DC.). Plants of spineless mandacaru are commonly found in gardens and parks of urban areas in northeastern Brazil. In addition to exploring their ornamental potential, morphological, and genetic characterization may contribute to the development of plant materials that can be used as a source of macromolecules of potential economic interest. The goal of this study was to estimate the genetic variability of spineless mandacaru accessions using random amplified polymorphic DNA (RAPD) and inter-simple sequence repeat (ISSR) molecular markers, and to characterize their morphology. Ten samples of newly emitted shoots with differentiated areolas and ribs were collected from each accession from the Cactaceous Germplasm Collection of Embrapa Agroindústria Tropical, in Fortaleza, CE. Shoot shape and aspects of spine primordia (presence, location, grouping, and size of spines) were evaluated. The morphological analysis showed that the spineless mandacaru presented spine primordia. Twenty-six RAPD and 15 ISSR primers were polymorphic. A total

of 262 markers were obtained, 129 of which were polymorphic. The average polymorphism of ISSR markers was higher than that of RAPD markers. The dendrograms for both analyses showed differentiation between accessions. Nevertheless, the molecular markers detected higher levels of diversity and a different pattern of diversity than those found using morphological markers. The molecular results revealed significant genetic variability both within and between groups.

Key words: Mandacaru; Genetic variability; RAPD; ISSR; Morphology

