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Development of RAPD-SCAR markers for different *Ganoderma* species authentication by improved RAPD amplification and molecular cloning

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ABSTRACT. The sequence-characterized amplified region (SCAR) is a valuable molecular technique for the genetic identification of any species. This method is mainly derived from the molecular cloning of the amplified DNA fragments achieved from the random amplified polymorphic DNA (RAPD). In this study, we collected DNA from 10 species of *Ganoderma* mushroom and amplified the DNA using an improved RAPD technique. The amplified fragments were then cloned into a T-vector, and positive clones were screened, indentified, and sequenced for the development of SCAR markers. After designing PCR primers and optimizing PCR conditions, 4 SCAR markers, named LZ1-4, LZ2-2, LZ8-2, and LZ9-15, were developed, which were specific to *Ganoderma gibbosum* (LZ1-4 and LZ8-2), *Ganoderma sinense* (LZ2-2 and LZ8-2), *Ganoderma tropicum* (LZ8-2), and *Ganoderma lucidum* HG (LZ9-15). These 4 novel SCAR markers were deposited into GenBank with the accession Nos. KM391935, KM391936, KM391937,

and KM391938, respectively. Thus, in this study we developed specific SCAR markers for the identification and authentication of different *Ganoderma* species.

Key words: Genetic identification; Random amplified polymorphic DNA; *Ganoderma* species; Sequence-characterized amplified region

