

Species-specific AFLP markers for identification of *Zingiber officinale*, *Z. montanum* and *Z. zerumbet* (Zingiberaceae)

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Genet. Mol. Res. 10 (1): 218-229 (2011)

Received November 17, 2010

Accepted December 6, 2010

Published February 8, 2011

DOI 10.4238/vol10-1gmr1154

ABSTRACT. The *Zingiber* genus, which includes the herbs known as gingers, commonly used in cooking, is well known for its medicinal properties, as described in the Indian pharmacopoeia. Different members of this genus, although somewhat similar in morphology, differ widely in their pharmacological and therapeutic properties. The most important species of this genus, with maximal therapeutic properties, is *Zingiber officinale* (garden ginger), which is often adulterated with other less-potent *Zingiber* sp. There is an existing demand in the herbal drug industry for an authentication system for the *Zingiber* sp in order to facilitate their commercial use as genuine phytoceuticals. To this end, we used amplified fragment length polymorphism (AFLP) to produce DNA fingerprints for three *Zingiber* species. Sixteen collections (six of *Z. officinale*, five of *Z. montanum*, and five of *Z. zerumbet*) were used in the study. Seven selective primer pairs were found to be useful for all the accessions. A total of 837 fragments were produced by these primer pairs. Species-specific markers were identified for all three *Zingiber* species (91 for *Z. officinale*, 82 for *Z. montanum*, and 55 for *Z. zerumbet*). The dendrogram analysis generated from AFLP patterns showed that *Z. montanum* and *Z. zerumbet* are phylogenetically closer to each other than to *Z. officinale*. The AFLP fingerprints of the *Zingiber* species could be

used to authenticate *Zingiber* sp-derived drugs and to resolve adulteration-related problems faced by the commercial users of these herbs.

Key words: DNA fingerprinting; AFLP; *Zingiber* spp; Adulteration; Molecular marker