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## Development of cultivar-specific DNA markers for *Lentinula edodes* (Berk.) Pegler based on SNP data via a MIG-seq approach

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**Purpose:** *Lentinula edodes* (shiitake) is a popular cultivated edible mushroom, with more than 200 cultivars in Japan. A rapid and precise cultivar-discrimination system will be useful for the management of existing cultivars and the development of new varieties. Our study objective was to develop cultivar-specific DNA markers based on genome-wide SNP data with MIG-seq (multiplexed ISSR genotyping by sequencing) technique.

**Methods:** A MIG-seq analysis was conducted for more than 70 shiitake cultivars provided by manufacturers and institutions. We identified SNPs specific to cultivar 5K-16 by comparing all tested cultivars, after which we designed sequence-specific primers. The target DNA was amplified and analyzed by agarose gel electrophoresis to assess the utility of the primers.

**Results and conclusions:** We detected more than 3,000 SNPs among the analyzed cultivars based on the MIG-seq data. To date, five primer sets that efficiently and specifically identify 5K-16 have been produced. Thus, our novel method for developing markers specific to 5K-16 based on genome-wide SNP data is useful for generating cultivar-specific DNA markers.