Cloning and sequence analysis of sucrose phosphate synthase gene from varieties of *Pennisetum* species

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**ABSTRACT.** Sucrose phosphate synthase (SPS) is an enzyme used by higher plants for sucrose synthesis. In this study, three primer sets were designed on the basis of known SPS sequences from maize (GenBank: NM_001112224.1) and sugarcane (GenBank: JN584485.1), and five novel SPS genes were identified by RT-PCR from the genomes of *Pennisetum* spp (the hybrid *P. americanum* x *P. purpureum*, *P. purpureum* Schum., *P. purpureum* Schum. cv. Red, *P. purpureum* Schum. cv. Taiwan, and *P. purpureum* Schum. cv. Mott). The cloned sequences showed 99.9% identity and 80-88% similarity to the SPS sequences of other plants. The SPS gene of hybrid *Pennisetum* had one nucleotide and four amino acid polymorphisms compared to the other four germplasms, and cluster analysis was performed to assess genetic diversity in this species.
Additional characterization of the SPS gene product can potentially allow Pennisetum to be exploited as a biofuel source.

**Key words:** Pennisetum Rich.; Sucrose phosphate synthase; Gene clone; Sequence analysis