

MOLECULAR CHARACTERIZATION AND EXPRESSION ANALYSIS OF A SOMATIC EMBRYOGENESIS RECEPTOR KINASE (*SERK*) GENE FROM *HEVEA BRASILIENSIS*

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In many plant species, somatic embryogenesis receptor kinase (*SERK*) gene, belonging to the plant receptor kinase superfamily and which encodes a leucine-rich repeat receptor-like kinase, is closely related to induction of somatic embryogenesis. *SERK* gene having prominent role in somatic embryogenesis has been characterized from monocotyledonous and dicotyledonous plants. In the present study, a partial *SERK* gene was cloned and characterized from *Hevea brasiliensis* (clone RR11 105). The genomic DNA sequence encoding *SERK* gene in *H. brasiliensis* was amplified with gene specific primers designed based on the consensus sequence reported in other crops. Under optimum PCR conditions, a single band of approximately 0.6 kb size was amplified from genomic DNA and the amplicon was cloned and sequenced. The partial *HbSERK* gene obtained was 612 bp in length with one intron. Homology search and sequence analysis demonstrated a high degree of identity with *SERK* genes reported from other plant species. RT-PCR analysis revealed higher expression of *HbSERK* gene in embryogenic callus, while no expression was detected in mature leaf indicating that *HbSERK* is associated with somatic embryogenesis induction. This is the first report of the characterization of a *SERK* gene in *H. brasiliensis* and the sequence was deposited to the GenBank under the accession number KJ451561.

Keywords: Embryogenic competence, Expression analysis, RT-PCR, *SERK* gene, Somatic embryogenesis

INTRODUCTION

Somatic embryogenesis is the process of formation of somatic embryos from somatic cells under *in vitro* conditions. This phenomenon has been reported for more than 200 plant species. During somatic embryogenesis, the transition of somatic to embryogenic state involves the genetic reprogramming of cells by the differential expression of a set of genes. Among the

genes involved with the induction of somatic embryogenesis, *SERK* gene is playing an important role. *SERK* gene belongs to the large plant receptor kinases family, often termed receptor-like kinases (RLK), containing a single transmembrane domain with a cytosolic kinases domain. This gene is also characterized by an extra cellular domain and plays important role in controlling a broad range of plant developmental process (Cock *et al.*, 2002).