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Differential expression of *BnSRK2D* gene in two *Brassica napus* cultivars under water deficit stress

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ABSTRACT

The sucrose non-fermenting 1-related protein kinase 2 (SnRK2) family members are plant unique serine/threonine kinases which play a key role in cellular signaling in response to abiotic stresses. The three SnRK2 members including SRK2D, SRK2I and SRK2E are known to phosphorylate major abscisic acid (ABA) responsive transcription factors, ABF2 and ABF4, involved in an ABA-dependent stress signaling pathway in Arabidopsis. This study aimed to clone and sequence an ortholog of the Arabidopsis *SRK2D* gene from *Brassica napus*, designated as *BnSRK2D*. An 833bp cDNA fragment of *BnSRK2D*, which shared high amino acid sequence identity with its Arabidopsis counterpart, was obtained suggesting a possible conserved function for these genes. The expression pattern of *BnSRK2D* and its potential target gene *B. napus* ABF2 (*BnABF2*) were then analyzed in the two cultivars with contrasting reaction to water deficit stress. Semi-quantitative reverse transcription polymerase chain reaction (RT-PCR) showed that *BnSRK2D* and *BnABF2* were water-deficit stress responsive genes with similar expression profiles. The accumulation of the *BnSRK2D* and *BnABF2* transcripts in the two cultivars was linked with their level of drought tolerance, as the drought tolerant cultivar had significantly higher expression levels of both genes under normal and water deficit stress conditions. These findings suggest that *BnSRK2D* and *BnABF2* genes may be involved in conferring drought tolerance in *B. napus*.

Key words: Rapeseed; SnRK2; BnABF2; Drought tolerance; Transcript accumulation

INTRODUCTION

Plants are frequently confronted with various abiotic stresses such as extreme temperatures, high salinity and drought that adversely affect their growth and productivity. To sense and respond to environmental stresses, plants have developed a series of molecular and physiological mechanisms. Stress signals are perceived by and

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