Hao Cheng, J Plant Physiol Pathol 2017, 5:3
DOI: 10.4172/2329-955X-C1-009

Cloning and characterization of an S-RNase gene in *Camellia sinensis*

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Self-incompatibility (SI) prevents inbreeding depression in angiosperms. The tea plant (*Camellia sinensis*) is an important beverage crop, but breeding improvements and genetic studies of the plant are hindered by SI. At present, the molecular mechanism of SI in C. sinensis remains unclear. In this study, a putative *CsS-RNase* gene (KU852488) was cloned from this plant. The full-length cDNA is 1121 bp, which encodes 238 amino acids. The expression patterns of *CsS-RNase* in different tissues and different time points after self- or cross-pollination were identified. The results revealed that CsS-RNase primarily expressed in the styles, and the expression of *CsS-RNase* in self-pollinated styles was up-regulated earlier than the crossed treatments. Then *CsS-RNases* were genotyped in 10 cultivars and one breeding line. As a result, 2 polymorphic amino acid residues were identified in the strains 'Fuding Dabaicha' and 'Fuyun6', which might affect the activity of RNase. Two and four cultivars have the same amino acid sequences. Afterwards, a single nucleotide polymorphism (SNP) marker of *CsS-RNase* was developed and genotyped in an F1 segregating population ('Longjing43'x'Baihao zao'). Eighty one homozygotes and 85 heterozygotes were distributed in F1 individuals, which corresponded to a Mendelian ratio of 1:1. Finally, the *CsS-RNase* was mapped onto linkage group 14 (LG14) of the reference genetic map of tea plant. We believe that the revelation of the *CsS-RNase* gene helps to characterize the SI mechanism and will promote breeding studies and genetic research in the tea plant.

Biography

Hao Cheng is the Director of National Center for Tea Improvement, TRICAAS, China. He has his expertise in Tea Breeding. He is interested in studying several important traits in tea plants, such as flavonoid biosynthesis, nitrogen uptake and self-incompatibility.

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