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Functional Characterization of the Gene of BrTSR53 for Drought Tolerance on Infant Stage in Rice

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In recent years, Environmental stresses such as drought, high salinity and low temperature have illustrated their adverse effects on crops having negative influence on plant development and productivity. Transcription factor, BrTSR53 gene is a putative stress-related gene isolated from *Brassica rapa*. We generated BrTSR53-over expression transgenic rice plants through *Agrobacterium*-mediated transformation. To investigate regulation of BrTSR53 expression in rice, quantitative real-time PCR was performed using RNAs from tissues and western blot analysis.

To further understand the role of BrTSR53 in stress tolerance, we studied responses of BrTSR53-overexpression transgenic rice plants to salt stress conditions.

To investigate the function of BrTSR53 in response to drought stress, we generated BrTSR53-overexpression transgenic rice plants and wild-type plants and dehydration test were performed. Each overexpressing transgenic plants and wild type rice plants grown on soils for 4 weeks. The four-week-old transgenic line and wild-type plant had water withheld for two to four days and then were rehydrated. After re-watering, The transgenic lines showed better recovery from water deficient condition and higher survival rates improved compared to wild-type plants. These results suggest that the transcription factor BrTSR53 gene played an important role in the tolerance of rice to drought stress.

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