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Heterogeneous overexpression of *Oryza sativa* salt induced RING Finger protein *OsSIRF1* positively regulates salt and osmotic stress in transgenic *Arabidopsis*

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Abstract

Plants suffer from various abiotic stresses among them; soil salinity is one of major adverse factor in declining agricultural productivity. So, development of salt stress tolerance crops have potential role to increase crop production. The RING finger proteins are known to play crucial roles in abiotic stress environment to plants. In this study, we identified one Salt-responsive Really Interesting new gene (RING) E3 ubiquitin ligase gene *OsSIRF1* from rice root tissues during salt stress and studied its molecular function. Expression of *OsSIRF1* was induced under various abiotic stress conditions, including salt, heat, drought, and ABA. Result of an *in vitro* ubiquitination assay clearly showed that *OsSIRF1* Possess an E3 ligase activity. Moreover, *OsSIRF1* was found to be localized to the nucleus within the cell. Heterogeneous overexpression of *OsSIRF1* in *Arabidopsis* improved seed germination and increased root length under salt and Manitol stress conditions. Taking together, these results suggested that *OsSIRF1* may be associated with plant responses to abiotic stressors and positively regulates salt and osmotic stress environment.

Keywords : Abiotic Stress; Rice; Ubiquitination, Subcellular localization

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