



## Expression of *osa-miR7695* Against Blast Fungus *Magnaporthe oryzae* in Vietnamese Rice Cultivars

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### Abstract

*Magnaporthe oryzae* causes rice blast disease, which leads to devastating yield losses in Vietnam and other rice-growing countries. Recent studies indicated that 30% of rice-growing areas are affected by rice blast disease. MicroRNAs (miRNAs) are short non-coding RNAs that are related to plant development and biotic stress tolerance. *Osa-miR7695*, as one of the common miRNAs and its target the *OsNramp6* gene, were evaluated as factors that contribute to the pathogenic activity of different rice cultivars. The expression profile of microRNA *osa-miR7695* was evaluated to identify blast resistance or blast susceptibility in rice cultivars. Results of RT-PCR and real-time qPCR indicated the presence of *osa-miR7695* in most *Oryzae sativa* Indica group cultivars in Vietnam. Up-regulation of *osa-miR7695* observed in blast resistant rice cultivars at different infection time intervals was higher than in blast non-resistant rice cultivars. Expression of the *OsNramp6* gene increased in blast non-resistant cultivars, particularly at 72 hours post inoculation. Average  $\Delta C_t$  values of *osa-miR7695* in blast resistant rice cultivars were higher by approximately 4-fold than in blast non-resistant rice cultivars. Results suggested *osa-miR7695* as a potential biomarker for microRNA-based detection of blast resistance and non-resistance in Vietnamese rice cultivars to improve understanding of the biological role of microRNA in rice immunity.

**Keywords:** *Osa-miR7695*, *Nramp 6*, rice cultivars, blast disease, qRT-PCR, *magnaporthe oryzae*