

Microsatellite Markers and Metabolite Profiles of Salt-Tolerant Rice: Inpari Unsoed 79 Agritan

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Abstract	<p>Salinity is a challenge in crop production. High salinity affects soil osmotic pressure and the balance of nutrients that inhibit plant growth. In such case, utilization of salt-tolerant rice varieties could be an alternative. This study aims to identify microsatellite markers associated with salt tolerance, compare the Inpari Unsoed 79 Agritan variety with ten other rice genotypes based on microsatellite markers and determine the qualitative composition metabolites in Inpari Unsoed 79 Agritan associated with the plant response to salinity. This research was carried out at the Laboratory of Plant Breeding and Biotechnology Universitas Jenderal Soedirman and Indonesian Institute of Sciences, Bogor. This research used eleven rice varieties and ten microsatellite markers. The identification of microsatellite markers consisted of genomic DNA extraction, quantification and qualification of DNA, amplification of microsatellite DNA and data analysis. Metabolite profiling was conducted on Gas Chromatography-Mass Spectrometry (GC-MS) instrument. The results showed that microsatellite markers RM 241, RM 515, RM 519 and RM 528 differentiate the Inpari Unsoed 79 Agritan from the IR 29 genotype. Microsatellite markers RM 129 and RM 292 distinguished the Nona Bokra from the IR 29 genotypes. The genetic relationship of eleven rice genotypes resulted in two clusters. The GC-MS metabolite compounds in Inpari Unsoed 79 Agritan are γ-Alanine and trimethylsilyl ester γ-Alanine, a derivative compound of γ-Alanine. These findings suggested that microsatellite markers RM 129, RM 292, RM 241, RM 515, RM 519 and RM 528 were associated with salt-tolerant in the seedling stage.</p>
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