

Cempo Ireng Pendek dan Merah Kalimantan Selatan adalah padi lokal berpigmen yang layak dikembangkan lebih lanjut sebagai pangan fungsional karena kandungan antosianinnya yang tinggi. Hasil skrining awal dan kajian pada level ekspresi gen transporter menunjukkan potensi kedua kultivar padi tersebut sebagai padi toleran salinitas. Namun, respon dan mekanisme toleransi padi terhadap salinitas bersifat kompleks dan melibatkan *regulatory network* oleh gen faktor transkripsi, salah satunya famili MYB yang meregulasi banyak gen yang responsif terhadap cekaman termasuk gen biosintesis prolin. Salah satu strategi untuk meningkatkan ketahanan padi dalam cekaman salinitas adalah *seed priming*. Teknik ini mampu meningkatkan laju dan keseragaman perkecambahan. Penelitian ini bertujuan untuk mengetahui pengaruh *seed halopriming* pada ekspresi gen faktor transkripsi *OsMYB91* dan gen *OsP5CS1* serta kadar prolin dalam cekaman salinitas pada Cempo Ireng Pendek dan Merah Kalimantan Selatan. Dalam penelitian ini *seed halopriming* dilakukan selama 48 jam dan dilanjutkan perkecambahan selama 7 hari. Penanaman bibit dengan sistem hidroponik menggunakan larutan nutrisi Yoshida dan perlakuan salinitas dilakukan dengan memberikan 150 mM NaCl pada padi Cempo Ireng Pendek, Merah Kalimantan Selatan dan padi kontrol Inpari 35 dan IR64. Pengukuran kadar prolin dilakukan dengan metode *Ninhydrin-based Colorimetric Assay* pada hari ke-4 setelah cekaman salinitas sedangkan pengukuran RWC dilakukan pada hari ke-7 setelah cekaman. Analisis ekspresi gen *OsMYB91* dan *OsP5CS1* dilakukan dengan metode qRT-PCR dari sampel daun setelah 6 dan 24 jam cekaman salinitas. *Seed halopriming* menyebabkan perbedaan RWC yang signifikan antara kedua padi berpigmen saat tercekam salinitas. Selain itu, *seed halopriming* mampu meningkatkan level ekspresi gen *OsMYB91* pada Cempo Ireng Pendek dan Merah Kalimantan Selatan namun gen *OsP5CS1* terekspresi lebih rendah pada tanaman perlakuan di kedua kultivar. *Seed halopriming* juga mampu meningkatkan kadar prolin Cempo Ireng Pendek secara signifikan namun justru menurun pada kultivar Merah Kalimantan Selatan. Penelitian ini menunjukkan perlakuan *seed halopriming* bekerja lebih efektif untuk meningkatkan toleransi terhadap cekaman salinitas pada Cempo Ireng Pendek dibandingkan Merah Kalimantan Selatan melalui peningkatan level ekspresi gen *OsMYB91* dan kadar prolin selama cekaman salinitas.

Kata kunci: Cempo Ireng Pendek, Merah Kalimantan Selatan, *OsMYB91*, *OsP5CS1*, prolin, salinitas.

Cempo Ireng Pendek and Merah Kalimantan Selatan are local pigmented rices that deserves to be developed more widely as a functional food because of its high anthocyanin content. The results of the initial screening and studies on the expression level of the transporter gene showed the potential of these rice as candidates for salinity tolerant rice. However, salinity stress tolerance mechanism is a very complex phenomenon, and involves a regulatory network by transcription factor genes, one of which is the MYB family which regulates many stress-responsive genes including proline biosynthetic genes. Seed priming is an alternative which can improve salt tolerance in plant. This study were to determined potential of seed halopriming for induction of salt tolerance rice based on transcription factor gene expression (*OsMYB91*) and *OsP5CS1* gene expression as well as proline levels in Cempo Ireng Pendek and Merah Kalimantan Selatan under salinity stress. In this study, seed halopriming was carried out for 48 hours and continued germination for 7 days. Seedlings were planted using a hydroponic system using Yoshida nutrient solution and salinity treatment was carried out by giving 150 mM NaCl to two pigmented rice and control cultivars (Inpari 35 and IR64). Measurement of proline levels was carried out using the Ninhydrin-based Colorimetric Assay method on the 4th day after salinity stress, while the RWC measurement was carried out on the 7th day after stress. Analysis of *OsMYB91* and *OsP5CS1* was carried out by qRT-PCR method from leaf samples after 6 and 24 hours of salinity stress. Seed halopriming cause a significant difference of RWC between Cempo Ireng Pendek and Merah Kalimantan Selatan under salinity stress. Seed *halopriming* was able to increase the expression level of the *OsMYB91* gene in Cempo Ireng Pendek and Merah Kalimantan Selatan, but the *OsP5CS1* gene was lower in halopriming plants in both cultivars. Seed halopriming was also able to increase proline levels in Cempo Ireng Pendek significantly but to decrease the proline levels in Merah Kalimantan Sekatan. This study showed that seed halopriming worked more effectively to enhanced salt stress tolerance in Cempo Ireng Pendek than Merah Kalimantan Selatan by upregulate of *OsMYB91* and proline levels during salinity stress.

Keywords: Cempo Ireng Pendek, Merah Kalimantan Selatan, *OsMYB91*, *OsP5CS1*, proline, salinity stress