

## INTISARI

Produktivitas tanaman padi menurun akibat cekaman salinitas. Teknik *seed halopriming* pada padi berpigmen Cempo Ireng Pendek dan Merah Kalimantan Selatan diketahui berpotensi meningkatkan toleransi terhadap cekaman salinitas. Penelitian ini bertujuan untuk mengetahui pengaruh *seed halopriming* terhadap perkecambahan biji, karakter fisiologis, serta level ekspresi gen *OsWRKY42* dan *OsWRKY70* padi berpigmen selama cekaman salinitas.

Kultivar padi Inpari 35 digunakan sebagai kultivar toleran dan IR64 sebagai kultivar rentan cekaman salinitas. Biji padi direndam larutan *halopriming* selama 48 jam sebelum dikecambahkan. Parameter perkecambahan diamati selama 7 hari setelah dikecambahkan. Kecambah padi berumur 7 hari setelah tanam (HST) dipindah tanam pada media hidroponik Yoshida, selanjutnya diberi perlakuan salinitas 150 mM dan 0 mM (kontrol) NaCl saat berumur 21 HST. Level ekspresi gen diukur pada jam ke-0, 6, dan 24 jam; indeks stabilitas membran dan kadar klorofil diukur pada 7 hari setelah perlakuan salinitas pada sampel daun.

Hasil penelitian menunjukkan *seed halopriming* memperpanjang perkecambahan biji padi, kecuali Inpari 35. *Seed halopriming* secara signifikan meningkatkan stabilitas membran dan menurunkan ekspresi gen *OsWRKY70* Cempo Ireng Pendek; meningkatkan kadar klorofil, karotenoid, dan stabilitas membran serta menurunkan ekspresi gen *OsWRKY42* Merah Kalimantan Selatan dibandingkan non-priming selama cekaman salinitas. *Seed halopriming* meningkatkan toleransi salinitas padi berpigmen dengan menurunkan ekspresi gen *OsWRKY42* dan *OsWRKY70* serta meningkatkan karakter fisiologisnya, selanjutnya dapat diaplikasikan pada tanaman padi hingga fase generatif.

Kata kunci: salinitas, *seed halopriming*, WRKY, Cempo Ireng Pendek, Merah Kalimantan Selatan.

### ***ABSTRACT***

Salinity stress affects to reducing of rice yield. Seed halopriming is prominent treatment to alleviate salinity stress in pigmented rice Cempo Ireng Pendek and Merah Kalimantan Selatan. However, further research is needed regarding the effect of seed halopriming on transcription factor related to salinity stress. This research aimed to understand the effect of seed halopriming to seed germination, physiological trait, and gene expression level of OsWRKY42 and OsWRKY70 on pigmented rice under salinity stress.

Inpari 35 rice used as a resistant cultivar and IR64 as a susceptible of salinity stress. The rice seeds were soaked in halopriming solution for 48 hours and germinated for 7 days. Germination parameter observed during 7 days after seed germinated. Young seedling aged 7 days after seed germination (DAS) transferred to Yoshida hydroponic media. After 21 DAS seedling treated with 150 mM and 0 mM NaCl. Gene expression level were measured at 0, 6, and 24 hours; the index stability membrane and chlorophyll content of leaf were measured at 7 days after salinity treatment.

Seed halopriming delayed the rice seed germination, except Inpari 35. Seed halopriming significantly increased membrane stability and downregulated of OsWRKY70 gene of Cempo Ireng Pendek also downregulated of OsWRKY42 gene and increased of chlorophyll content, carotenoid, and membrane stability compared to non-priming during salinity stress. Seed halopriming improving pigmented rice tolerance to salinity stress by downregulated expression of OsWRKY42 and OsWRKY70 gene also improved their physiological traits. Furthermore, seed halopriming can be applied and observed in rice up to generation phase.

**Keyworld:** salinity, seed halopriming, WRKY, Cempo Ireng Pendek, Merah Kalimantan Selatan