

Category	: International Rice Research Conference
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Keyword 1	: Adaptation to climate change
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Title of Entry	: Expression of OsHKTs, Na ⁺ and salt tolerant abilities in near-isogenic line of FL530 × KDML105, 221-48 and parental KDML 105 and FL530 grown under salt stress in reproductive stage
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Ion homeostasis is a crucial salt defense system, leading to maintain the survival rate in rice crop grown under salt stress condition, especially Na ⁺ compartmentation. Previously, Pokkali rice has been reported as salt tolerant cultivar, which plays as a positive check in salt tolerant screening. In addition, similar genetic back ground of rice containing different salt tolerant abilities plays as a good candidate genetic resource for salt tolerant defense mechanisms. FL530, near isogenic line of Pokkali × IR29 was selected as parental lines to backcross with KDML105 prior to develop an inbred line namely '221-48', carrying quantitative trait locus SCK1 which encoded to HKT-type transporter. In reproductive stage (50%-flowering), the NaCl in the solution was adjusted to either 0 (control) or 150 mM NaCl (salt stress). Na ⁺ content in flag leaf tissues of '221-48' under salt stress for 6 h was very low at 8.0 mg g ⁻¹ DW and lower than that in FL530 (36.4 mg g ⁻¹ DW) and KDML105 (42.1 mg g ⁻¹ DW). Relative expression level of OsHKT2;1, a key function on Na ⁺ unloading to xylem in '221-48' of flag leaf tissues was up-regulated correspondingly when plants exposed to salt stress for 6 h. In addition, expression level of OsHKT1;5, Na ⁺ uploading to leaf tissues in '221-48' was unchanged in plants under salt stress, leading to low Na ⁺ in the leaf tissues. Reduction percentage of number of leaf (15.8%), leaf length (10.3%) and leaf width (7.8%) in '221-48' were lower than those of KDML105, subsequently maintain the fertility of rice grain. In summary, OsHKT2;1 and OsHKT1;5 in rice line '221-48' may play as Na ⁺ transporter and management to majorly contribute on salt tolerance ability, causing to alleviate growth performances and yield.

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