

Evaluation of expression of OsAMT1;1 under different nitrogen concentration

ABSTRACT

The NH_4^+ and NO_3^- are N sources available for plant nutrition in most soils. The NH_4^+ role in plant nutrition has most likely been underestimated. This study provides basic information on the expression of OsAMT1;1 that is needed in understanding factors contributing to upland rice Nitrogen Use Efficiency (NUE) at the molecular level. The objective of this studies is to evaluate OsAMT1;1 expression on landraces with different NUE under different nitrogen level. To further understand the molecular basis of responsiveness of these two contrasting upland rice landraces to different N inputs at the N uptake level, a laboratory experiment was conducted to study how members of ammonium transporter gene family respond to different nitrogen conditions. Two upland varieties, Landrace III (high Nitrogen Use Efficiency) and Landrace I (low Nitrogen Use Efficiency) were grown in 4 nitrogen levels (0.05mM NH_4NO_3 , 0.1mM NH_4NO_3 , 1mM NH_4NO_3 and 2mM NH_4NO_3). Quantitative RT-PCR was used to study the expression of patterns of rice OsAMT1;1 genes. Results from this study showed that Landrace III has relatively higher expression of OsAMT1;1 compared to Landrace I for all treatments. Expression of OsAMT1;1 is clearly up-regulated in response to low-nitrogen treatment. Expression levels of OsAMT1;1 in high-NUE upland rice landrace was higher compared to low-NUE upland rice landrace. These results suggested, expression of OsAMT1;1 had certain degree of influenced in NUE of upland rice landraces.

Keyword: OsAMT1;1; Upland rice; Nitrogen transporter; qRT-PCR; High-affinity transporter