

Sawanya Charoenlappanit 2011: Proteomics Analysis of Salinity Responding Proteins in Cell Suspension of Rice (*Oryza sativa* L. subsp. indica). Master of Science (Botany), Major Field: Botany, Department of Botany. Thesis Advisor: Associate Professor Niran Juntawong, Dr.nat.tech. 116 pages.

Salt stress is a major abiotic factor that limits crop productivity worldwide, especially rice which is a main food and an important exporting product of Thailand. Previous studies reported that in the affected paddy field, NaCl leads to changes of the physiological and biochemical processes of rice to overcome the deleterious effect. In this study, the activity of various enzymes and salt responding proteins during NaCl in rice cell suspension of salt-tolerant Pokkali, HJ and Thai Jasmine rice KDML105 salt-sensitive IR29 and PT1 and were determined by enzyme assay and GeLC-MS analysis.

The salt stress responding enzyme activity via  $\beta$ -glucosidase, peroxidase and ATPase were studied for 48 h. The different patterns of enzyme activity in the salt-tolerant and salt-sensitive rice were found. The relative activity of peroxidase and ATPase except  $\beta$ -glucosidase showed the significantly up-regulation in salt stress. In proteomic analysis, 43 differential expressed proteins were clustered in 13 clusters depending on their expression profile during salt stress. These proteins were identified and involved in transcription and translation processes, protein metabolism, sugar metabolism, energy metabolism, secondary metabolite synthesis, hormone synthesis, glutathione metabolism, binding and transporting protein, cell defense and response protein, signal transduction and skeleton and cell organization. Among 43 proteins, peroxidases, GST and NADH dehydrogenase subunit 5 were expressed as salt stress protein. The expression of peroxidase, GST and NADH dehydrogenase subunit 5 were found in the salt-tolerant PK, HJ and KDML 105 but not found in the salt-sensitive IR29 and PT1.

---

Student's signature

---

Thesis Advisor's signature