

## Proteomic Analysis of 2,4-Epibrassinolide Alleviating Low Temperature Stress in Rice Seedling Leaves

**Authors :** Jiang Xu, Daoping Wang, Qun Li, Yinghong Pan

**Abstract :** 2,4-Epibrassinolide (EBR), which is a kind of plant hormone Brassinosteroids (BRs), is widely studied and applied in the global scale but the proteomic characteristics of EBR alleviating low temperature stress in rice seedling leaves are still not clear. In this study, seeding rice of Nipponbare were treated with EBR and distilled water, then stressed at 4°C or 26 °C, and analyzed by mass spectrometry analysis, verified by parallel reaction monitoring technique (PRM). The results showed that 5778 proteins were identified in total and 4834 proteins were identified with quantitative information. Among them, 401 up-regulated and 220 down-regulated proteins may be related to EBR alleviating low temperature stress in rice seedling leaves. The molecular functions of most of up-regulated proteins are RNA binding and hydrolase activity and are mainly enriched in the pathways of carbon metabolism, folic acid synthesis, and amino acid biosynthesis. The down-regulated proteins are mainly related to catalytic activity and oxidoreductase activity and are mainly enriched in the pathways of limonene and pinene degradation, riboflavin metabolism, porphyrin and chlorophyll metabolism, and other metabolic pathways. PRM validation and literature analysis showed that NADP-malic acidase, peroxidase, 3-phosphoglycerate dehydrogenase, enolase, glyceraldehyde-3- phosphate dehydrogenase and pyruvate kinase are closely related to the effect of EBR on low temperature stress. These results also suggested that BRs could relieve the effect of low temperature stress on rice seed germination in many ways.

**Keywords :** 2,4-Epibrassinolid, low temperature stress, proteomic analysis, rice

**Conference Title :** ICABBBE 2018 : International Conference on Agricultural, Biotechnology, Biological and Biosystems Engineering

**Conference Location :** Vienna, Austria

**Conference Dates :** June 14-15, 2018