

Comparative Proteomic Analysis of Rice *bri1* Mutant Leaves at Jointing-Booting Stage

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Abstract : The jointing-booting stage is a critical period of both vegetative growth and reproductive growth in rice. Therefore, the proteomic analysis of the mutant *Osbr1*, whose corresponding gene *OsBRI1* encodes the putative BRs receptor *OsBRI1*, at jointing-booting stage is very important for understanding the effects of BRs on vegetative and reproductive growth. In this study, the proteomes of leaves from an allelic mutant of the *DWARF 61* (*D61*, *OsBRI1*) gene, *Fn189* (*dwarf54*, *d54*) and its wild-type variety *T65* (*Taichung 65*) at jointing-booting stage were analysed by using a Q Exactive plus orbitrap mass spectrometer, and more than 3,100 proteins were identified in each sample. Ontology analysis showed that these proteins distribute in various space of the cells, such as the chloroplast, mitochondrion, and nucleus, they functioned as structural components and/or catalytic enzymes and involved in many physiological processes. Moreover, quantitative analysis displayed that 266 proteins were differentially expressed in two samples, among them, 77 proteins decreased and 189 increased more than two times in *Fn189* compared with *T65*, the proteins whose content decreased in *Fn189* including b5-like Heme/Steroid binding domain containing protein, putative retrotransposon protein, putative glutamyl-tRNA synthetase, and higher content proteins such as mTERF, putative Oligopeptidase homologue, zinc knuckle protein, and so on. A former study founded that the transcription level of a mTERF was up-regulated in the leaves of maize seedling after EBR treatment. In our experiments, it was interesting that one mTERF protein increased, but another mTERF decreased in leaves of *Fn189* at jointing-booting stage, which suggested that BRs may have differential regulation mechanisms on the expression of various mTERF proteins. The relationship between other differential proteins with BRs is still unclear, and the effects of BRs on rice protein contents and its regulation mechanisms still need further research.

Keywords : *bri1* mutant, jointing-booting stage, proteomic analysis, rice

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