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Alteration in rice proteome due to boron toxicity in growing seedling stage

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Boron is an essential micronutrient required for normal growth of plants as known since centuries. There is a narrow margin between the deficiency and toxicity of boron. Similar to boron deficiency, boron toxicity also has very critical effect on the morphology, physiology and metabolism of rice plant. In the present study we have evaluated the morphological, biochemical and proteomic alterations occurred in rice plants which were treated with different concentration of boron, starting from moderate (0.5mM) to high (1.5mM). As a result we found that on increasing the concentration of boron, up to 0.5mM it promotes the growth rate, whereas on increasing the concentration to 1.5mM, it adversely affects the metabolome of rice plants. Loss of chlorophyll content, relative water content and altered behavior of antioxidative enzymes shows how adversely it affects the physiology of plants. Whereas increase in the production of several reactive oxygen species like peroxide radicals and superoxide anions indicates its effect on the biochemistry of plants. Proteins isolation was done from the whole leaf tissue crude extract and the alteration was studied by two dimensional gel electrophoresis followed by MALDI-MS. Number proteins were found to be up-regulated ,down-regulated and few new proteins were also expressed.

Biography

Anjana Rani has completed her MSc at the age of 26 years from Devi Ahilya University and presently pursuing her doctoral studies from Banaras Hindu University Department of Biochemistry. She is also designated as DST-WOS-A under the mentorship of Professor R.S. Dubey who is currently vice chancellor of TMB University. She has published 2 papers in reputed journals and serving as Principle investigator of a project funded by Department of Science and Technology.

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