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Arsenic and cadmium affect the crosstalk between auxin and jasmonate in *Oryza sativa* L

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Cadmium (Cd) and arsenic (As) soil and water contamination is a frequent cause of stress for plants, especially for the cereal crop *Oryza sativa*. The root is the first organ to respond to the presence of these toxic elements and often to be severely damaged. In general, plant response to abiotic stress involves phytohormones which in turn coordinate arrays of plant growth and developmental programs (1). Indole-3-acetic acid (IAA) is a key regulator of many aspects of plant growth and development, especially for the maintenance of the quiescent centre (QC) cells in the root apex (2). Jasmonic acid (JA), a lipid derived phytohormone, is an important plant growth regulator with versatile functions in the development and in the response to environmental stress (3). Sun and coworkers reported in *Arabidopsis thaliana* plants a relation between IAA and Jasmonates (JAs), methyl-jasmonate (MeJA) in particular. (4). IAA and JA have been suggested to interact in the presence of abiotic stress, but the effects of this interaction needs further investigation. The aim of this research was to understand the crosstalk between auxin and JAs in the presence of As and Cd. For this purpose, we carried out different experiments using the JA biosynthetic mutant *coleoptile photomorphogenesis 2 (Cpm2)* (3). Morphological and histological analyses of wild type (ssp. japonica, cv. Nihonmasari) and Cpm2 plants were carried out after exposure to As and/or Cd. Furthermore, IAA-sensitive *OsDR5::GUS* plants (5), treated with As and/or Cd and different MeJA concentrations, were analyzed. qRT-PCR analyses of the expression of some JAs biosynthetic genes after exposure to As and/or Cd were carried out. All together the results suggest that As and Cd interfere with auxin and JAs during root formation in rice.

Biography

Marilena Ronzan is a PhD student in Botany at the University La Sapienza in Rome, specialized in the response of plants to Arsenic and Cadmium contamination. In her Master Thesis she studied the response of the hyperaccumulator fern pteris vittata to the presence of Cadmium alone or combined with As (Ronzan et al., 2016). Her PhD project is focused on the hormonal response, in particular of auxin and jasmonates, in *Oryza sativa* and *Arabidopsis thaliana* after exposure to As and Cd. She is interested in understanding the response of plants to a frequent cause of soil and water contamination in order to find solutions to prevent or at least reduce the effect of such elements in plant production and their presence in the food chain.

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