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LC-MS analysis of Pipecolic Acid, N-Hydoxypipecolic Acid and Salicylic Acid in one resistant and susceptible variety of tomato (Solanum Lycopersicum L.).

Pipecolic is an amino acid which primes the plants for defense amplification and biosynthesis of salicylic acid (SA) in plants. Pipecolic acid (Pip) and SA help in activating systemic acquired resistance (SAR) in plants against many pathogens. We investigated the chemical profile by LC–MS/MS in tomato plants for the presence of (Pip), (SA) and N-hydroxypipecolic acid (NHP) in different leaf samples of plants inoculated with Ralstonia solanacerum and Pip treated. Here, we show comparative accumulation of Pip, NHP and SA in two different plant varieties of tomato, one susceptible (GT-2) and the other resistant (GAT-5). Among all treatments studied by LC-MS, SA was found to be the most abundant compound in methanol extract of Pip-treated samples of both resistant and susceptible varieties, whereas Pip and NHP were prominently present in plants inoculated with Ralstonia and treated with Pip. Hence, exogenous application of Pip to tomato plants provides defense against bacterial wilt caused by Ralstonia solanacerum. Thus, we conclude that exogenous application of Pip causes significant accumulation of Pip, NHP, and SA in tomato plants, which indicates Pip may act as an elicitor to activate the defense priming response in plants against bacterial wilt in tomato plants.

Biography

Miss Usha K. Sabharwal studied B. Sc (H) Biomedical Sciences from the University of Delhi and she completed her M. Sc in Plant Molecular Biology and Biotechnology from the University of Delhi South Campus. She has joined the Lab of Prof. R.B. Subramanian from the P.G. Department of Biosciences, Sardar Patel University to pursue her Ph.D. degree in Biotechnology in 2018 to work in the field of molecular biology to understand the complex system and an advantageous approach made to understand systemic acquired resistance in plants. Using bacteria and elicitors to yield information about basic biological processes in plants. From the very beginning, her education has been strongly associated with pathogens and with particular emphasis on molecular biology, especially gene regulation. She has a deep interest in the structures of biological molecules as well as their interactions and how these interactions explain observations of classical biology. As a Ph.D. student, she is working on the role of pipecolic acid in plant pathogen interaction.