

## **Response of Alfalfa (*Medicago sativa*) root exudates to di (2-ethylhexyl) phthalate stress by untargeted metabolomic analysis**

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Root exudates are the main media of information communication and energy transfer between plant roots and soil. Understanding the response of root exudates to contamination stress is quite crucial to reveal the rhizoremediation mechanism. In this study, the response of alfalfa root exudates to bis(2-ethylhexyl) phthalate (DEHP) stress was investigated based on untargeted metabolomic analysis. The root exudates of alfalfa were collected by greenhouse hydroponic culture and measured by gas chromatography-time-of-flight mass spectrometry (GC-TOF-MS). The results indicated that 314 compounds were identified in alfalfa root exudates, in which carbohydrates, acids and lipids accounted for 28.6%, 15.6% and 13.9%, respectively. The orthogonal partial least squares discriminant analysis (OPLS-DA) results showed DEHP generated a significant influence on the composition and contents of root exudates. 50 metabolites were obviously changed even at lower concentration of DEHP, including common carbohydrates, acids and some rhizospheric signal materials, such as 4',5-dihydroxy-7-methoxyisoflavone and so on. Carbohydrate and fatty acid metabolism were the primary metabolic pathway influenced by DEHP stress, while amino acid metabolism had a little change in response to DEHP stress.