

GC-MS-based metabolic analysis to help unravelling the biological role of aluminum (Al) in *Qualea grandiflora* Mart. (*Vochysiaceae*)

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Qualea grandiflora Mart. is a species of Brazilian savanna (Cerrado) that depends on aluminum (Al) to grow and develop properly. In this study, the metabolic profile of *Q. grandiflora* roots and leaves grown with and without Al has been investigated by gas chromatography-mass spectrometry (GC-MS). The score plots of principal component analysis (PCA) and partial least squares-discriminate analysis (PLS-DA) showed clear discrimination between control and Al-treated samples of both tissues samples. The metabolic profile indicated that the presence of Al caused changes in sugars, amino acids and organic acids accumulation between treatments. Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway analysis of integration data demonstrated *Q. grandiflora* grown with Al resulted in biochemical changes in several metabolic pathways including carbohydrate metabolism, glutathione metabolism, photosynthesis, amino acid metabolism and oxidative phosphorylation-related pathways. Furthermore, an integrated analysis of the effects of Al will be performed on metabolites and transcripts levels in *Q. grandiflora*. These results will contribute to elucidate the metabolic role of Al in this native species, which can be the basis for genetic manipulation of crop plants towards higher tolerance to acid soils.

Biography

Renata Cristina Costa e Silva is pursuing her PhD at the Department of Botany, University of Brazilian. Her thesis proposal is directed towards "unravelling the metabolic role of Al in Cerrado plants". These plants need Al to grow and develop. Currently, she is on the process of evaluating the transcriptome of *Qualea grandiflora* grown with and without Al.

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