Metabolomics 2016, 6:3(Suppl)
http://dx.doi.org/10.4172/2153-0769.C1.035

Intracellular siderophore detection in an Egyptian, cobalt-treated *Fusarium solani* isolates using SEM-EDX with reference to its tolerance

Farrag M Rasha[1,2]
[1]Prince Sattam Bin Abdulaziz University, KSA
[2]Al-Azhar University, Egypt

A plant pathogenic *Fusarium solani* Egyptian isolate was grown on cobalt concentrations of 0, 50, 200, 500, 800, and 1000 ppm. The isolate survived at concentrations up to 800 ppm, however failed to grow at 1000 ppm. Morphology and elemental analysis of the isolate under the investigated Co concentrations were studied using scanning electron microscopy (SEM) and energy dispersive X-ray microanalysis (EDX). The isolate reserved its morphology up to a concentration of 200 ppm. Morphological distortions were observed at 500 and 800 ppm. EDX detected co-uptake through the hyphae, microconidia, macroconidia, and chlamydospores. Iron, calcium and potassium were also detected. EDX results showed a gradual increase in the total average Fe% with the increase in cobalt concentration up to a concentration of 500 ppm reflecting the ability of the isolate to synthesize intracellular siderophore storing iron and their release out of the vacuoles. Such siderophore might have participated in conferring tolerance against cobalt. At 800 ppm, the % of Fe was greatly reduced with an accompanying increase in morphological distortions and absence of microconidia. Increasing cobalt concentrations resulted in increasing the percentages of the chelated cobalt reflecting the possible implication of the cell wall in the uptake of cobalt supported by the high calcium and potassium percentages detected. The possible participation of extracellular siderophore in cobalt chelation is also discussed. The current results recommend the absence of cobalt in any control regime taken to combat the investigated *F. solani* isolate as well as the accomplishment of biochemical, ultra-structural and molecular studies on such isolate to approve the production of siderophore and the role of cell wall in cobalt uptake.

rasha_farrag@hotmail.com

Notes: