



Changes in protein profile detected in seedlings of *Caesalpinia peltophoroides* (Fabaceae) after exposure to high concentration of cadmium

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ABSTRACT. Sibipiruna (*Caesalpinia peltophoroides* Benth) is a tree of the Brazilian Atlantic Forest. It is a flowering ornamental tree widely planted throughout Brazil and indicated for restoration of degraded areas. We examined protein profile changes in leaves of seedlings of *C. peltophoroides* grown in nutrient solution under greenhouse conditions, after exposure to cadmium (Cd; 32 mg/L). A two-dimensional gel was used to analyze proteins expressed in response to stress 24 and 72 h after initiation of treatment with Cd. Various protein bands were identified that were related to stress response and/or metabolic adjustments, including proteins involved with resistance to stress, including detoxification, degradation, antioxidant, transport, signal transduction, photosynthesis, electron transport, biosynthesis reactions, and

transcription regulation. After 24 h of Cd exposure, the genes of most of these proteins were upregulated. These putative proteins were associated with resistance to stress, including heat shock proteins, heat stress transcriptional factor and other transcriptional factors, aquaporins, glutathione transferase and choline monoxygenase. Most of the putative proteins observed after 72 h of exposure to Cd were downregulated. They were mainly photosynthetic process proteins, such as NAD(P)H-quinone oxidoreductase, photosystem I assembly, and photosystem II CP47 chlorophyll apoprotein. There were also proteins involved with degradation, biosynthesis and antioxidant activity, such as ATP-dependent Clp protease, methylthioribose-1-phosphate and glutathione peroxidase 2. Based on preliminary proteomic analysis, we conclude that proteins related to photosynthetic activity are inhibited, decreasing plant performance under stress conditions and that several proteins related to defense mechanisms are activated, inducing the plant defense response.

Key words: Abiotic stress; Heavy metals; Photosynthesis; Phytotoxicity; Stress resistance; Woody species