



Effect of cadmium on carbon metabolism in young plants of *Virola surinamensis*.

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Cadmium (Cd) is a highly toxic heavy metal, even at low concentration. The objective of this study was to evaluate the effects of Cd doses on carbon metabolism in young plants of *Virola surinamensis*. The experimental design was completely randomized with five concentrations of Cd (0, 15, 30, 45 and 60 mg L⁻¹). The plants were maintained under these conditions for 60 days. The concentrations of total soluble carbohydrates (TSC) in the roots increased from 0.06 mmol Glu g⁻¹ (control) to 0.1 mmol Glu g⁻¹ (60 mg L⁻¹ of Cd) and in the leaves, the values of TSC were 0.09 mmol Glu g⁻¹ (control) and 0.1 mmol Glu g⁻¹ (15 mg L⁻¹ of Cd). Sucrose concentrations in plants treated with Cd increased significantly in roots and leaves. In the roots, the values were 1.16 mg of sucrose g⁻¹ DM (control) and 2.11 mg of sucrose g⁻¹ DM (60 mg L⁻¹ of Cd) and 0.57 mg sucrose g⁻¹ DM (control) and 2.38 mg sucrose g⁻¹ DM (60 mg L⁻¹ of Cd). The concentrations of reducing sugars increased in the roots and decreased significantly in leaves of plants submitted to the presence of Cd. In the roots the values were 0.83 μmol carb g⁻¹ DM (control) and 1.42 μmol carb g⁻¹ DM (45 mg L⁻¹ of Cd) and in the leaves the values obtained were 1.57 μmol carb g⁻¹ DM (control) and 1.27 μmol carb g⁻¹ DM (15 mg L⁻¹ of Cd). Proline concentrations in roots and leaves of plants submitted to Cd doses increased significantly. In the roots, the values obtained were 0.60 μmol Pro g⁻¹ DM (control) and 0.76 μmol Pro g⁻¹ DM (60 mg L⁻¹ of Cd) and in the leaves of the control plants and in the dose of 60 mg L⁻¹ of Cd, the proline concentrations were 0.81 and 1.06 μmol Pro g⁻¹ DM, respectively. The Cd tolerance index in *Virola surinamensis* was of an IT between 0.35 and 60 and high IT > 60. *Virola surinamensis* presented higher self-protection capacity in the form of bioaccumulation of total soluble carbohydrates, sucrose and proline, important in the tolerance of the plant to the presence of Cd.

Keywords: Proline, sucrose, tolerance, ,