



Gas exchange in young plants of *Virola surinamensis* exposed to cadmium

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Cadmium (Cd) is a non-essential and highly toxic heavy metal. The objective of this study was to evaluate the gas exchange of young plants of *Virola surinamensis* submitted to cadmium concentrations. 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 predawn water potential (Ψ_{am}), stomatal conductance (g_s), transpiration (E) and liquid photosynthesis (A) reduced with increasing doses of Cd. The Ψ_{am} decreased from -0.29 MPa (control) to -0.46 MPa (concentration of 60 mg L⁻¹ of Cd), the lowest values of A (1.6 $\mu\text{mol m}^{-2} \text{s}^{-1}$), g_s (13.0 $\text{mmol m}^{-2} \text{s}^{-1}$) and E (0.48 $\text{mol m}^{-2} \text{s}^{-1}$) was obtained in concentration of 60 mg L⁻¹ of Cd. The concentration of intercellular CO₂ (C_i) increased from 90.6 $\mu\text{mol m}^{-2} \text{s}^{-1}$ (control) to 206.0 $\mu\text{mol m}^{-2} \text{s}^{-1}$ (45 mg L⁻¹ of Cd). The water use efficiency (A/E) reached the lowest value (3.3 $\mu\text{mol m}^{-2} \text{s}^{-1} / \text{mol m}^{-2} \text{s}^{-1}$) in 60 mg L⁻¹ of Cd) and the relation of liquid photosynthesis and intercellular CO₂ concentration (A/ C_i) decreased from 0.13 $\mu\text{mol m}^{-2} \text{s}^{-1} / \mu\text{mol m}^{-2} \text{s}^{-1}$ (control) to 0.007 $\mu\text{mol m}^{-2} \text{s}^{-1} / \mu\text{mol m}^{-2} \text{s}^{-1}$ (60 mg L⁻¹ of Cd). The accumulation of Cd in roots was of 1333,5 mg kg⁻¹ of DM in the concentration of 45 mg L⁻¹ of Cd. In stem and leaves, the biggest values of Cd (23.9 and 6.2 mg kg⁻¹ of DM, respectively) were obtained in 45 mg L⁻¹ of Cd. Changes in Ψ_{am} and gas Exchange (g_s and E) in *V. surinamensis* may have limited the transport of the Cd from the roots to the shoot as a form of metal tolerance.

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