

THE ROLE OF NITRIC OXIDE MODULATORS IN UPTAKE OF CADMIUM BY CHAMOMILE PLANTS (*MATRICARIA CHAMOMILLA*, *ASTERACEAE*)

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ABSTRACT

The role of nitric oxide (NO) under Cd excess in chamomile (*Matricaria chamomilla*) was studied using known NO modulators (donor: sodium nitroprusside/SNP and scavenger: 2-phenyl-4,4,5,5-tetramethyl-imidazoline-1-oxyl-3-oxide/PTIO). Analyses showed that this modulator-enhanced Cd uptake depleted glutathione and partially ascorbic acid contents though it was expected that SNP should provide antioxidative protection through higher accumulation of antioxidants. Identification of phytochelatins using Orbitrap Elite system confirmed the occurrence of PC₂ and PC₃ and further LC-MS/MS quantification revealed depletion by SNP or PTIO application. In Cd treatment alone, glutathione and PCs increased concomitantly with NO generation, confirming their role in chamomile tolerance to metallic stress. These data provide the evidence that SNP/PTIO interacting with intact plants affect metal uptake and must therefore be used with caution.

Key words: nitric oxide, modulators, cadmium, reactive oxygen species, phytochelatins

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