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**Biochemical and functional characterization of an atypical plant L-arginase from Cilantro (*Coriandrum sativum* L.).**

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**Abstract**

Arginase is one of the key enzymes responsible for maintaining the essential levels of nitrogen among plants, but biochemical and functional characterization of arginase among plants is limited. While screening for stable plant arginase, we found cilantro possessing an abundant and stable arginase. We purified arginase to apparent homogeneity (3,300-fold purification) with a specific activity of 81,728 nmoles of urea formed/mg of protein/min and its eight-tryptic fragments had amino acid sequences identical to *Arabidopsis thaliana* arginase. Cilantro arginase exhibited absolute requirement for  $Mn^{2+}$  (0.5 mM- 1 mM). Unlike other known plant arginases, cilantro arginase did not hydrolyse D-arginine and other arginine analogues. While for sulfhydryl reagents the enzyme was sensitive, L-NOHA, an arginase inhibitor showed only moderate inhibition - a property distinct from tomato arginase. We also found arginine derived amino acids and polyamines can regulate cilantro

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