Adaptative Evolution of Metallothionein 3 in the Cd/Zn Hyperaccumulator *Thlaspi caerulescens*

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A functional screening in yeast allowed to identify various cDNAs from the Cd/Zn hyperaccumulator *Thlaspi caerulescens*. *TcMT3* displayed high identity with its closest homologue in *Arabidopsis thaliana* but variation in its Cys residues. Functional analysis in yeast supported a higher binding capacity for Cu, but not for Cd or Zn, of *TcMT3* compared to *AtMT3*. Expression analysis in plants indicated that metallothionein 3 (*MT3*) like all the other *T. caerulescens* genes from the screen studied is overexpressed in all studied populations of *T. caerulescens* compared to *A. thaliana*. *TcMT3* was induced by Cu, but not by Cd. Moreover significant variation in expression within *T. caerulescens* populations that have contrasting tolerance and accumulation capacities indicated a possible local adaptation of MT3.

Key words: Metallothionein, Metal Homeostasis, Metal Hyperaccumulation