

**EXPRESSION OF A METALLOTHIONEIN A1 GENE OF *PISUM SATIVUM* IN WHITE POPLAR ENHANCES TOLERANCE AND ACCUMULATION OF ZINC AND COPPER**

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Metallothioneins (MT) play an important role in heavy metal detoxification and homeostasis of intracellular metal ions in plant. In this study, two transgenic lines expressing the *PsMT<sub>A1</sub>* gene from *Pisum sativum* for a metallothionein-like protein, a regenerated non transformed line NT and the clone AL22, selected as heavy metal tolerant, were characterized for the ability to accumulate zinc and copper and to activate antioxidative enzyme defenses, superoxide dismutase, catalase, ascorbate peroxidase, in presence of the heavy metals (HM). Transgenic line during HM stress showed a higher ability than NT and AL22 to translocate both metals from root to shoot accumulating high amounts of zinc and copper. The antioxidant enzyme defence was differently activated in response to metals in the transgenic lines without a significant increase of reactive oxygen species (ROS). These data suggest that *PsMT<sub>A1</sub>* expression decreases ROS accumulation leading to increased zinc and copper sequestration in root and leaf and enhanced metal tolerance.