

# Cloning and Expression Analysis of 1 L-*myo*-Inositol-1-phosphate Synthase Gene from *Ricinus communis* L.

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A novel 1 L-*myo*-inositol-1-phosphate synthase (MIPS, EC 5.5.1.4) gene, designate *rcMIPS*, was cloned from *Ricinus communis*. It contained an open reading frame (ORF) of 1669 bp coding for a peptide of 510 amino acids with a molecular mass of 56 kDa. Sequence analysis showed high homology compared to other plant MIPS genes, because it contained typical domains owned by MIPS enzymes. The transcript levels of the *rcMIPS* gene in leaves, stems, and roots were examined after drought stress for 24, 48, and 72 h. The transcript levels in the leaves, stems, and roots increased significantly compared to the control. Results of the enzyme assay showed a significant correlation between the changes of enzyme activity and the transcript levels of the *rcMIPS* gene in different organs. Decreased relative water contents (RWC) and increased malondialdehyde (MDA) contents in the leaves represented a stress response against drought stress. Our findings suggest that MIPS plays an important role in the defensive mechanisms of *R. communis* against drought stress.

**Key words:** *Ricinus communis* L., 1 L-*myo*-Inositol-1-phosphate Synthase (MIPS), Gene Expression, Drought Stress