Influence of Chemical Treatments on Glutathione *S*-Transferases of Maize with Activity Towards Metolachlor and Cinnamic Acid

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The subcellular distribution of glutathione *S*-transferase (GST) activity extracted from shoots of 3-day-old etiolated seedlings of maize (*Zea mays* L., Northrup-King 9283 hybrid) and the induction of soluble and membrane-bound GST activity by the safener benoxacor, the herbicide metolachlor and their combination (CGA-180937) were investigated. GST activity extracted from maize shoots was detected in both cytosolic and microsomal fractions and utilized 1-chloro-2,4-dinitrobenzene (CDNB), metolachlor, and *trans*-cinnamic acid (CA) as substrates. Soluble GST activity extracted from maize shoots was greater than microsomal with CDNB or metolachlor as substrate. Membrane-bound GST activity was greater than soluble with cinnamic acid as substrate. Washing the microsomal preparations from maize shoots with Triton X-100 increased GST(CA) activity. Pretreatment with the safener benoxacor or a formulated combination of the herbicide metolachlor with benoxacor induced soluble GST(CDNB), GST(metolachlor) and GST(CA) activities in maize shoots. Benoxacor and CGA-180937 induced also membrane-bound GST(CDNB) and GST(CA) activities in maize shoots, but did not affect membrane-bound GST(metolachlor) activity. These results confirm that maize contains multiple GST isozymes that differ in their subsrate specificity and inducibility by safeners or other chemicals.

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