Visualization of Glutathione Conjugation and Inducibility of Glutathione S-Transferases in Onion (*Allium cepa* L.) Epidermal Tissue

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Glutathione conjugation of 1-chloro-2,4-dinitrobenzene, 1,2-dichloro-4-nitrobenzene, NBD-Cl, monobromobimane and monochlorobimane was found to occur in epidermal tissue of onion bulbs (*Allium cepa* L.). Conjugation required the presence of glutathione S-transferases (GST). In order to follow glutathione conjugation microscopically, bimanes were utilized. Monochlorobimane was converted to a brightly fluorescing conjugate that was shown to be transported to the nucleus before sequestration in the vacuole occurred. GST activity was stimulated as well as induced by several electrophilic xenobiotics, by cycloheximide and by several glutathione conjugates. γ-Glutamylcysteine conjugates that are formed during enzymatic cleavage of glutathione conjugates in plants, were not active as inducers of enzyme activity. In the light of the stimulating effects of xenobiotic glutathione conjugates on GST activity, it is concluded that glutathione conjugates may act as signal molecules.