

MEETING ABSTRACTS

THE ROLE OF UDP-GLYCOSYLTRANSFERASES IN XENOBIOTIC-RESISTANCE

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Uridine diphosphate sugar-utilizing glycosyltransferases (UGTs) are an enzyme superfamily that catalyzes glycosyl residues transfer from activated nucleotide sugars to acceptor molecules. In addition to various endogenous compounds, numerous xenobiotics are substrates of UGTs. As the glycosides formed are generally less active/toxic and more hydrophilic than aglycones, UGTs effectively protect organisms from potentially harmful xenobiotics. Therefore, increased UGTs expression and/or activity improves the protection of the organism and may contribute to the development of individuals that become more resistant to certain xenobiotics. While the function of UGTs in the resistance of human cancer cells to chemotherapy is now well known, other organisms and other xenobiotics have attracted much less attention. UGTs play an important role in defense against xenobiotics not only in humans, but in countless other organisms such as parasites, insects, and plants. Moreover, many recent studies clearly show the participation of UGTs in the resistance of nematodes to anthelmintics, insects to insecticides, weeds to herbicides as well as humans to various drugs (not only those used in cancer therapy but also in the treatment of epilepsy, psychiatric disorders, hypertension, hypercholesterolemia, and HIV infection). Nevertheless, although the contribution of UGTs to xenobiotic resistance in diverse organisms has become obvious, many pieces of information remain missing, for example with regard to the mechanisms of UGTs regulation.

Keywords: UGT; drug-resistance; herbicide-resistance; insecticide-resistance; anthelmintic-resistance