

Protective effect of ethanol extract of x Brassicoraphanus on hepatic damage in D-galactosamine intoxicated rats and *Agrobacterium*-mediated transformation with myrosinase gene in Chinese cabbage

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In our previous study, x Brassicoraphanus, an intergenic breed crossed between Brassica campetris ssp. pekinensis and Raphanus sativus exerted antithrombotic activity. Thus, in the present study, protective effect of ethanol extract of x Brassicoraphanus was evaluated on the liver damage in D-galactosamine intoxicated rats. Ethanol extract of x Brassicoraphanus significantly inhibited lipid peroxide, and phase I type enzymes including xanthine oxidase, aldehyde oxidase, aminopyrine N demethylase, aniline hydrolase in D-galactosamine-intoxicated rats, while it also significantly increased the phase II type enzymes such as SOD, catalase and GSH-PX compared with untreated control. Glucosinolate is a secondary metabolite considered to play a role in plant defense against pathogens and insect pests. It is hydrolyzed to an aglycone by myrosinase during chopping and chewing of uncooked vegetables. Glucosinolate and their breakdown products could also act as antipromoter agents by causing apoptosis of highly proliferating tumorigenic cells. To analyze the function of myrosinase gene, Chinese cabbage (Inbred line DA001) was transformed with sense- or antisense-oriented myrosinase gene. Tobacco (SR1) plants were also transformed with same gene as model plants. Hypocotyl explants of Chinese cabbage and leaves of tobacco plants were inoculated with *Agrobacterium tumefaciens* LBA4404, respectively, and transgenic plants were selected with PPT 4.0 mg/L for tobacco and PPT 2.0 mg/L for Chinese cabbage. From tobacco transformation, 18 transgenic tobacco plants with sense-oriented myrosinase gene and 15 with antisense-oriented were obtained. For Chinese cabbage 10 and 10 transgenic plants were obtained with sense-oriented or antisense-oriented myrosinase gene, respectively. These transgenic plants were acclimated in greenhouse and are growing for further studies.

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