B-143 Effect of plant hormones on *in vitro* organogenesis of genetically transformed tobacco plants

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Tobacco (*Nicotiana tabacum* L.) regenerants (T_4) obtained by a transformation with *Agrobacterium* plasmid containing gene-4 responsible for cytokinin synthesis, were characterized by having well growing shoots with a developed root system. However, genetically transformed T_4 plants as well as control ones required exogenous hormones for callus induction. Growth of callus tissues derived from stem explants of control plants was highly dependent on hormone supplies particularly IAA (Indole-3-acetic acid) and kinetin to the medium and they died on non-hormonal media in the dark. Unlike calli of control plants T_4 calli were capable of hormone independent growth in long term cultures in the dark while they successfully grew in media supplemented with an auxin and a cytokinin as well. Shoot formation capacity of T_4 callus tissues was observed in the light on a non-hormonal medium and this phenomenon was enhanced by addition of kinetin to the medium. T_4 tobacco leaves were characterized by increased level of auxins as well as cytokinins: endogenous cytokinin activity in T_4 leaves has been increased up to 5-fold, whereas its auxin activity was greater upto 10-fold than that in control plants. Moreover, a reduction of endogenous abscisic acid level has been established. Increase of IAA level could be explained by the reduced level of its inhibitor IAA-oxidase. Increased chlorogenic acid level can be considered to be one of the reasons for suppressed activity of IAA-oxidase since it is an inhibitor of IAA-oxidase and subsequently enhanced level of auxin. Therefore, a transformation of a bacterial gene (gene-4) into the genome of a higher plant induced hormonal changes in plant tissues. This evidence may establish an existence of a correlation between the enhanced production of cytokinin caused by the foreign gene and changes in level of other plant growth regulators.