E233 Phytolaccosides Production in Hairy Roots Cultures of *Phytolacca esculenta* VAN HOUTTE

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Phytolaccoside G and D2 from hairy roots (clone PEH2) induced by inoculation of *Phytolacca esculenta* with *Agrobacterium tumefaciens* A_4T were identified by TLC, HPLC, IR, Mass, ^{1}H-NMR, and ^{13}C-NMR. SH medium was the best for growth of hairy roots, whereas MS medium was the best for phytolaccosides production. The synthesis of phytolaccoside G and D2 in the hairy roots cultures was depended upon light, but the growrh was inhibited in proportion to light intensity (250 to 2,000 lux). The production of phytolaccosides G was increased with the increment of light intensity up to 1,500 lux, but it was decreased at more than 1,500 lux. Also, this phenomenon was observed in phytolaccoside D2 at low intensity of 500 lux. It was found that blue light is the most effective for phytolaccoside production in hairy roots. The optimum production of phytolaccoside G was shown in the medium supplemented with sodium pyrosulfate + glutathoine or ascorbic acid + sodium pyrosulfate + glutathione under light condition. When chitosan and yeast extracts as elicitors were treated into the medium under light condition, the content of phytolaccoside G and D2 was increased remarkably.

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Involvement of protein phosphorylation in ethylene biosynthesis in etiolated mung bean hypocotyls was investigated.

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Treatment of the segments with okadaic acid, a serine threonine type phosphatase inhibitor, caused an increase in ethylene production from the segments. Other phosphatase inhibitors, Caliculin A and NaF also increased ethylne production slightly. Auxin-induced ethylene biosynthesis was also increased by okadaic acid treatment. Staurosporine, which is serine threonine type kinase inhibitor, decreased auxin-induced ethylene biosynthesis. The effect of okadaic acid on auxin induced ethylene biosynthesis started to apear at 1.5 hr following auxin and okadaic acid treatment. The lag period of auxin induced ethylene production was not affected by okadaic acid treatment. In auxin- pretreated tissues, okadaic acid treatment resulted in increased ethylene production compared with the buffer control. These data suggest that phosphorylated state of phosphproteins is required for ethylene biosynthesis in the mung bean hypocotyl system. It is also sugested that the action of auxin to induce ethylene production is associated with phosphorylation of componets(s) in the control system.