

49f Protein Expression Profiles for Benzophenanthridine Alkaloids Production in *Eschscholtzia Californica* Induced by Elicitor

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The California Poppy (*Eschscholtzia californica*) is an ancient medicinal plant capable of producing several benzophenanthridine alkaloids of pharmaceutical importance, including the antibiotic sanguinarine, chelirubine, macarpine, and chelerythrine. Benzylisoquinoline alkaloids biosynthesis begins the conversion L-tyrosine to both dopamine and 4-hydroxyphenylacetaldehyde and involves several biosynthetic steps and reactions until branch-point intermediate (S)-reticuline. (S)-norcoclaurine-6-O-methyltransferase(6OMT), (S)-coclaurine-N-methyltransferase(CNMT), (S)-N-methylcoclaurine-3'-hydroxylase(CYP80B1), 3'-hydroxy-(S)-N-methyl-coclaurine-4'-O-methyl-transferase (4'OMT) and berberine bridge enzyme(BBE) take part in these steps. For overproduction of sanguinarine from *E. californica*, the purified yeast extract was used as elicitor and metabolite contents were checked. We have performed analysis of proteins sequentially extracted from *E. californica* 7 and 14-day-old suspended cells which were cultured with elicitor and these proteins were separated by western blotting and two-dimensional electrophoresis (2-DE). We revealed major differences on the profiles of metabolites production and protein expression level of 5 enzymes related to biosynthetic pathway between control (unelicited) cells and elicited cells. It gave us the critical information on bottleneck in sanguinarine production biosynthetic pathway and the activation of these enzymes which is related limiting step will show the overproduction of benzophenanthridine alkaloids.