

P 10

Elicitation of Red Pepper Suspension Cell for the Production of Capsidiol

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Objectives

To determine optimal condition for the production of sesquiterpenoid phytoalexin, capsidiol from suspension cell of red pepper, and to understand the mechanism of capsidiol biosynthesis in plant cell.

Materials and Methods

1. Plant material: Pepper suspension cells (*Capsicum annuum* var. *Subicho*)
2. Methods: Elicitation by adding jasmonic acid, cellulase, pectinase, yeast extract, chitosan, NaF, AgNO₃, arachidonic acid, agar, agarose, UV and gamma (⁶⁰Co) radiation stress, inhibitors (ancymidiol, ketocornazol, tetcyclasis, cyclohexamide)

Results and Discussion

Capsidiol in the medium of suspension cultures was absent from control cells, but highly accumulated in the elicitor treated cells with cellulase (CL), jasmonic acid (JA), arachidonic acid (AA). Elicited cells gradually lost their viability and eventually died in 48 hours of elicitation by the toxicity of capsidiol accumulated in the culture medium. Other elicitors such as, YE, CT, AN, NF, AO, UV also effectively induced pepper cells, but the effect of PT, AG, GM was negligible on capsidiol production (Figure 1).

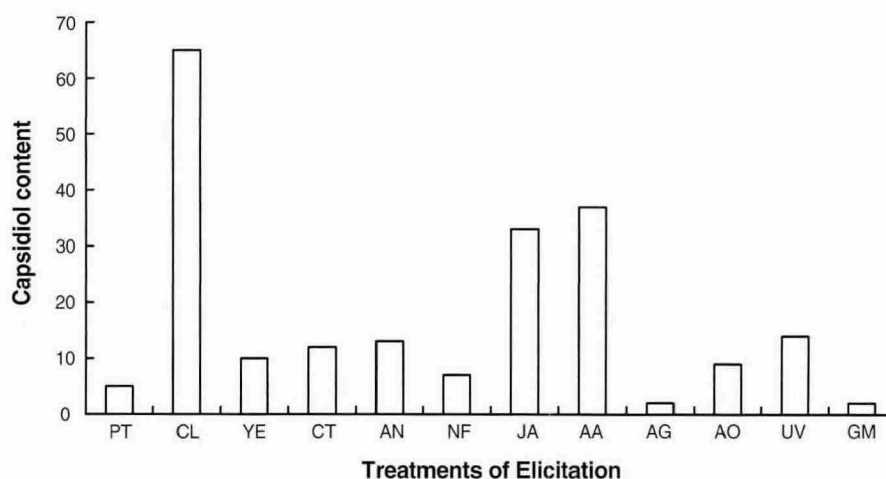


Figure 1. Elicitation of pepper suspension cells by various elicitors. PT, pectinase; CL, cellulase; YE, yeast extract; CT, chitosan; AN, AgNO₃; NF, NaF; JA, jasmonic acid; AA, arachidonic acid; AG, agar; AO, agarose; UV, ultra-violet, GM, gamma ray.