

## عنوان مقاله:

Establishment of adventitious root culture in *Echinacea purpurea* and enhanced accumulation of caffeic acid derivatives by biotic and abiotic elicitors

## محل انتشار:

دوفصلنامه اصلاح مولکولی گیاهان، دوره 9، شماره 2 (سال: 1400)

تعداد صفحات اصل مقاله: 11

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## خلاصه مقاله:

The present study aimed to develop a protocol for root induction and evaluate the effects of salicylic acid (SA) (0, 10 and 160 mg/l) and yeast extract (YE) (0, 0.75 and 1.5 g/l) on chlorogenic acid, caftaric acid, cichoric acid, cynarin and echinacoside production in *Echinacea purpurea* adventitious roots. Also, the effect of  $\text{NH}_4\text{NO}_3$  (0, 0.25, 0.75, 1.0 X) concentration in MS medium supplemented with indole-3-acetic acid (IAA) (1 and 3 mg/l) on root induction was investigated. The results showed that adventitious root induction in coneflower was significantly influenced by  $\text{NH}_4\text{NO}_3$  and IAA concentrations ( $p \leq 0.01$ ). The highest percentage of root induction (100%) and average number of roots formed on each explant (14.3 roots) was observed in 1 mg/l IAA  $\times$  1/4  $\text{NH}_4\text{NO}_3$  MS culture medium treatment. The main effect of SA and YE and their interaction effects with exposure time on the measured traits (except for echinacoside) was significant ( $p \leq 0.01$ ). The result showed that application of 1.5 g/l YE and 160 mg/l SA when harvested 96 hour post-elicitation are the most effective treatments to elicit caffeic acid derivatives (CADs) content. The highest chlorogenic acid, cichoric acid, caftaric acid, and cynarin production was obtained in 160 mg/l SA at 96 hours post-elicitation that was 2.13, 1.83, 2.39 and 2.97-fold higher compared to control respectively. The heatmap diagram showed that the CADs content in SA and YE treatments was clearly separated from each other and control treatment.

## کلمات کلیدی:

Cichoric acid, Coneflower, Elicitor, In vitro, Medicinal plant, yeast extract

## لینک ثابت مقاله در پایگاه سیویلیکا:

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