

## عنوان مقاله:

The Effect of Cellulase Enzyme on Some Biochemical Traits of Licorice (*Glycyrrhiza glabra* L.) under Cell Suspension Culture Conditions

## محل انتشار:

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## خلاصه مقاله:

Licorice roots and rhizomes have numerous secondary metabolites, which are used as medicine. Cell and tissue culture of medicinal plants can be used for the production of secondary metabolites, and the use of elicitors, stimulates the production and increase of these valuable compounds. For this purpose, the effect of cellulase enzyme from *Aspergillus Nigare* as a fungal elicitor in cell suspension culture conditions as a completely randomized design with 3 replications, on traits such as phenol, flavonoid, antioxidant activity, carbohydrate, tannin, protein, nitrogen, and proline levels were tested in untreated, late-harvesting callus conditions, 24 hours, 48 hours and 72 hours after treatment with cellulase. Variance analysis showed that there is a statistically significant difference between the studied treatments in all traits. A comparison of the mean traits also showed that phenol, flavonoid, antioxidant activity, tannin, and proline traits showed the highest increase in the treatment 72 hours after the treatment, and the carbohydrate, nitrogen, and protein traits showed a decreasing trend compared to the control treatment. Regarding the increase in the amount of phenol, flavonoid, tannin, and antioxidant activity during the treatment with cellulase, it can be said that cellulase, like other fungal elicitors, stimulates and induces the production of secondary metabolites in cell suspension culture conditions and confirms the possibility of the presence of secondary metabolites in callus and cell suspension of this plant in addition to Licorice root and rhizome. A decrease in nitrogen and protein and an increase in proline have also been reported due to the role of nitrogen in the accumulation of amino acids and stimulating the accumulation of flavonoids in plants.

## کلمات کلیدی:

Antioxidant activity, flavonoid, fungal elicitor, secondary metabolite

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