Effect of Fungal Elicitor on Growth, Antioxidant Potential and Production of some Secondary Metabolites in Hazelnut (*Corylus Avellana*) Cell Suspension Culture

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Plant cell culture is now recognized as one of the renewable and alternative sources for the production of secondary metabolites [1]. Recent research has shown that hazelnut (*Corylus avellana*) and its cell culture also produce taxan, including taxol, which is approximately equal to the yew. Handling of cell culture media with elicitors is one of the important strategies for the induction of secondary metabolism and the production of valuable metabolites. In this research, the effect of various concentrations of fungal elicitor (yeast extract) in concentrations of 0, 0.5, 1 and 2 % (W/V) on growth, antioxidant potential and production of some secondary metabolites in hazelnut cell culture was investigated in a completely randomized design with 4 replications. The parameters measured were cell growth, total Phenolics, flavonoids and anthocyanins, antioxidant potential and taxol production. The results showed that the treatment with different concentrations of fungal elicitor significantly affected the growth and studied metabolites of hazelnut cells in suspension culture. Growth of cells was significantly higher in treatment with 2% concentration in comparison with other treatments. There was a significant difference between different concentrations of fungal elicitor in terms of growth, antioxidant potential and production of taxol. In general, application of different concentrations of fungal elicitor compared to control treatment increased cellular growth, levels of taxol, phenolics, flavonoids and anthocyanins significantly. The antioxidant potential was highest in the 1% concentration of fungal elicitor (70.08 %), which is 3 times more than that of the control culture. Maximum amount of taxol (44.53 µg/L) was obtained in 1% concentration of fungal elicitor in cell culture, which was 1.67 times more than that of the control culture. It seems that fungal elicitor stimulated defence responses of cells and increased the production of secondary metabolites.

Keywords: Hazelnut; Elicitation; Fungal elicitor; Taxol; Secondary metabolite

References

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