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Novel medium for enhancing callus growth in hazel (*Corylus avellana L.*)

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Paclitaxel is a powerful antimitotic agent with excellent activity against a range of cancers. In addition to *Taxus* sp. and paclitaxel-producing endophytic fungi, hazel has also been described as a paclitaxel-producing species among angiosperms. Fast-growing callus is a key prerequisite for the success of mass callus production and then paclitaxel production. Therefore, selecting a suitable medium to improve the growth of calli is a key step for the success of *in vitro* paclitaxel production. In this research, to optimize Murashige and Skoog (MS) medium for enhancing callus growth of hazel (*Corylus avellana L*), the effects of some factors, including pH of medium, different concentrations of mineral elements, spirulina (*Arthrospira platensis*) powder, casein hydrolysate, gelrite and some amino acids were investigated. Results clearly showed that the M10 medium (MS medium with pH of 6.0 and supplemented with 1000 mg l-1 spirulina powder, 1000 mg l-1 casein hydrolysate and 3 g l-1 gelrite) significantly improved the hazel callus growth. This modified MS medium increased callus fresh weight (55.8%) compared to the control. This medium is promising for facilitating the mass production of hazel callus as a new source of paclitaxel. In this experiment, the paclitaxel concentration was also assessed in the cell suspensions prepared from the produced calli in the M10 and control media. The highest total yield of paclitaxel (extracted from both cells and medium) were obtained from the control (77.7 µg l–1) and M10 (91.1 µg l–1) media on the days 21 and 25, respectively.

Biography

Ahmad Moieni received a PhD in Plant Cell and Molecular Biology from INP-ENSAT, Toulouse, France in 1997. He is Associate Professor in Department of Plant Breeding, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran. His research interests include: haploid plants production by anther culture and isolated microspores culture, colchicine-induced polyploidy, micropropagation, and *in vitro* production of plant secondary metabolites via cell culture and hairy roots culture.

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