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Production of rosmarinic acid from *in vitro* culture of Basil (*Ocimum basilicum* L) and Lemon balm (*Melissa officinalis* L)

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Over the past three decades, plant cell and tissue culture and plant biotechnology techniques have proved to be a valuable tool for study biosynthesis and production of plant secondary products. Rosmarinic Acid (RA) is a natural phenolic compound produced by variety species of Lamiaceae and Boraginaceae families. In the recent few years, RA has attracted attention due to its antiviral, antibacterial, anti-inflammatory and anti-allergic activities. In the present study, the efficiency of using plant tissue culture techniques as a promising alternative method for the production of RA from basil and lemon balm was tested. Callus and shoot cultures were established using different types of explants and medium composition to test the optimum condition for their production. Results showed that leaf explants were the best explants for callus production. MS medium containing 1 mg/l BA and 1 mg/NAA (MS2) was the best medium for callus growth in lemon balm while MS4 was the optimum media for basil. Stem segments and shoot tips were used as explants for production of shoot cultures in lemon balm and basil. RA levels were determined in control, callus and shoot cultures. Results showed that callus and shoot cultures accumulated higher levels of RA compared to control. RA levels ranged from 9.42±1.27 to 38.25±0.73 µg/mg plant dry weight. Shoots produced 3 and 2.7 folds higher rosmarinic acid levels compared to control in lemon balm and basil. The overall results indicated that plant tissue culture is an efficient tool for RA production from basil and lemon balm plants.

Biography

Raoufa A I Abdel Rahman has completed her PhD in 2003 at Alexandria University, Faculty of Agriculture, Genetics Department, through a collaborative scholarship with University of Georgia, Athens, USA. She completed a research project entitled 'Exploring IRES mediated discistrons for the phytoremediation of Mercury'. Currently, she is the Director of Pharmaceutical Bio-products Research Department, City of Scientific Research and Technology Applications, Alexandria, Egypt. Her main research interests are using plant tissue culture and genetic engineering techniques to conserve rare and endangered plant species, as well as enhancement the productivity of important pharmaceutical compounds from plants. She is working in several projects dealing with the production of antiviral, anticancer, and antioxidant compounds from plants using *in vitro* cultures.

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