

## Callus Induction and Application of Methyl Jasmonate to Increase Dopamine in Calluses of *Portulaca oleracea* L.

F. Heidargholinezhad\*, H. Moradi, M. Karimi and V. Akbarpour<sup>1</sup>

Purslane (*Portulaca oleracea* L.) contains valuable ingredients such as dopamine, noradrenaline and omega-3. Increase in secondary metabolites by elicitors is widely used in tissue culture of medicinal plants. The aim of this study was to assess effect of plant growth regulators on callus induction and amount of dopamine in callus tissue of purslane under the influence of methyl jasmonate as an elicitor. For this purpose, in the first experiment the interaction effects of different concentrations of BAP (0, 1, and 2 mg L<sup>-1</sup>) and 2,4-D (0, 0.5, and 1.5 mg L<sup>-1</sup>) on two kinds of explants (leaf and meristem) were examined. The best callogenesis was obtained in the leaf explants with maximum callus induction (100%), fresh weight (121 mg), and callus diameter (5.1 mm) by combined application of 2 mg L<sup>-1</sup> BAP and 0.5 mg L<sup>-1</sup> 2,4-D. In the second experiment the effects of methyl jasmonate application (0, 100, and 200 µM) on dopamine production of calluses during 2, 4, and 6 days of treatment were investigated. After extract preparation of different treatments, the amount of dopamine was determined by HPLC. The highest amount of dopamine (0.685 mg L<sup>-1</sup>) was obtained in concentrations of 200 µM after two days of treatment. Application of methyl jasmonate enhanced dopamine content in all treatments compared to the control. Therefore, methyl jasmonate which is an effective elicitor to increase secondary metabolite in purslane.

**Keywords:** Auxin, Cytokinin, Elicitor, Medicinal plant, Secondary metabolites.

1. M.Sc. Student of Biotechnology and Molecular Genetics of Horticultural Products and Assistant Professors of Department Horticulture, Sari Agricultural Sciences and Natural Resources University, Sari, Iran, respectively.

\* Corresponding author, Email: (sari.agri201558@gmail.com).