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## Seed culture: A successful method for avoiding polyphenolic oxidation of *Malus domestica* L. explants during micropropagation

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One of the new and important ways of plant propagation is micropropagation or tissue culture technique. Apple is a candidate species of micropropagation for large number of root-stocks and scion cultivars. Although there are advantages of micropropagation, there are still problems associated with its commercial applications, like the browning due to the exudation of phenolics into the medium as a response to wounding at excision. The objective of the present study is to develop an efficient micropropagation protocol for two different apple cultivars (cv Golden Delicious and cv Red Delicious) to the avoidance of polyphenolic oxidation during the first stage of in vitro technique establishment. As primary explants apical buds and mature seeds are used, and are evaluated for their efficiency during the first stage of proliferation and regeneration. Bud explants are treated by diverse methods like the use of antioxidants (ascorbic acid, citric acid, PVP), adsorbing agents (activated charcoal and PVP) and physical treatments like darkness or the frequent transfer of explants to fresh medium. The most optimal method results the use of Murashige & Skoog medium supplemented with MS vitamins and combined with cytokinin BAP (1 mg.l<sup>-1</sup>) and auxin IBA (0.1 mg.l<sup>-1</sup>), ascorbic acid (0.1%) and citric acid (0.1%) in darkness conditions. In spite of this, the method is effective for only 43% of primary explants. A parallel experiment is conducted using mature seeds cultivated in MS media combined with cytokinin BAP (1 mg.l<sup>-1</sup>) and auxin NAA (0.1 mg.l<sup>-1</sup>) and in a 16/8 light/dark regime. The regeneration percentage is very high (99%) and there are observed no signs of phenolics exudation onto nutrient media. The success of the first stage of proliferation affects the optimal development of the explants in the other stages of micropropagation.

### Biography

Dr. Valbona Sota has completed her PhD in Plant Biotechnology from University of Tirana, Albania. Since 2008 she is working as Lecturer -Researcher in the Department of Biotechnology at University of Tirana. More than 40 presentations of scientific research, 13 of them as first author; 19 original research papers, 8 of them as first author; Coauthor in a monograph; Author of two Text-books for students.

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