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Eradication of Apple mosaic virus from Corylus avellana L. via Cryotherapy and Confirmation of Virus-Free Plants via Reverse Transcriptase Polymerase Chain Reaction

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Abstract : Apple mosaic virus (ApMV) is an ilarvirus causing harmful damages and product loses in many plant species. Because of xylem and phloem vessels absence, plant meristem tissues used for meristem cultures are virus-free, but sometimes only meristem cultures are not sufficient for virus elimination. Cryotherapy, a new method based on cryogenic techniques, is used for virus elimination. In this technique, 0.1-0.3mm meristems are excised from organized shoot apex of a selected in vitro donor plant and these meristems are frozen in liquid nitrogen (-196 °C) using suitable cryogenic technique. The aim of this work was to develop an efficient procedure for ApMV-free hazelnut via cryotherapy technique and confirmation of virus-free plants using Reverse Transcriptase-PCR technique. 100% virus free plantlets were obtained using droplet-vitrification method involved cold hardening in vitro cultures of hazelnut, 24 hours sucrose preculture of meristems on MS medium supplemented with 0.4M sucrose, and a 90 min PVS2 treatment in droplets.

Keywords : droplet vitrification, hazelnut, liquid nitrogen, PVS2
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