

Determination of Optimal Sterilization Types for *In Vitro* Propagation of Walnuts Cultivars in Georgia

Iveta Megrelishvili*, Ekaterine Bulauri, Maia Kukhaleishvili and Tamar Chipashvili
Georgian Technical University, Biotechnology Center, Georgia

Microbial diseases have been reported in the walnut orchards due to different reasons in recent years in Georgia. For the purpose of walnuts tissue cultures reproduction, it is necessary to determine the optimal type of sterilization of initial material.

The aims of this study were determined optimal sterilization type to propagate walnuts cultivars 'Pedro', and 'Chandler' using tissue culture technique.

The initial explants (unimodal micro cuttings with a length between 1 and 1.2 cm) of three cultivars were collected from the young 2-3 years old walnuts orchards, Dzevera, ShidaKartli, Georgia. Two sterilized types were used for *in vitro* propagation of walnuts: **I.** 1-2% hypochlorite 10-15 min, followed 70 % alcohol -30 min and 3 times sterile distillate water **II.** 0.1% mercuric chloride 5 min and 3 times sterile distillate water.

It was revealed that microbial contamination were 58.97% using 0.1% mercury chloride and relatively high by sodium hypochloride-85.12%.

DKW medium was used for *in vitro* cultivation of walnuts cultivars supplemented with 0.1 mg/L IBA, 1 mg/L BAP and sucrose 3%. The pH of culture medium was adjusted at 5.5 before adding the gelling agent and autoclaving. Micro cuttings were kept at 25±2°C under a 16 h photoperiod.

Finally, optimal sterilization types of initial explants (Combination II) was determined. Walnuts cultivars: 'Pedro' and 'Chandler' were propagated using tissue culture methods first time in Georgia.

This study led to develop an effective method for micro propagation of *Juglansregia*, which enable us to establish new walnuts orchards in Georgia.

Biography:

Iveta Megrelishvili has completed his PhD at the age of 28 years from Ivane Javakhishvili Tbilisi State University. She is the main research scientist of Georgian Technical University, Biotechnology Center and Head of Virology Lab, Scientific-Research Center of Agriculture. He has published more than 8 papers in reputed journals and has a great experience in the field of plant biotechnology, plant virology and molecular biology.