REDUCING OXIDATIVE STRESS ON ZYGOTIC EMBRYOS OF WALNUT (*JUGLANS REGIA* L.) UNDER *IN VITRO* CONDITIONS BY THEIR PRETREATMENT WITH ASCORBIC ACID

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ABSTRACT

Persian walnut (*Juglans regia* L.) is an autochthonous species of Albania and considered endangered (EN) based on IUCN criteria. It is important to find and develop successful protocols for in vitro propagation. A major problem in this regard is the oxidative stress that explant undergo in nutrient media after their isolation. The purpose of this study is to find a suitable method for preventing polyphenolics exudation by pre-treatment of zygotic embryos with different concentrations of ascorbic acid and different exposing time in this solution. It was observed that browning rate, is a parameter highly affected by the concentration of ascorbic acid solution and exposing time. Explants from Control group show a high rate of browning and this parameter is significantly different from all the other treatments tested. Exposing time does not have any significant effect when using 150 mg/l ascorbic acid. Furthermore, treating with 200 mg/l ascorbic acid for 10 min. does not have any significant effect with none of the treatments using 150 mg/l ascorbic acid. It was observed from the results, the groups that showed high values of browning rates, had lower values of proliferation rates. It was evident that treating with 200 mg/l ascorbic acid for 20 min, gave a lower proliferation rate (82.2 %) in comparison with treatment using 200 mg/l ascorbic acid for 15 min (88.8). This may be related to the side effects that occur when the treatment lasts for a longer time.

Keywords: Persian walnut, *in vitro* propagation, oxidative stress, ascorbic acid.