

## The Effect Of Salicylic Acid And Mannitol On The Propagation Of The Adventitious Shoot Buds Of The Date Palm Owidicv. In Vitro

**Khaun Ali Muhsen**

Date palm Research Centre, Basrah University, Iraq.

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### Abstract

This study was conducted in the tissue culture laboratory of the date palm Research Center, University of Basrah, during the period 2/1/2018 to 31/12/2019. It investigates four concentrations of salicylic acid (SA) and mannitol (MA) (0, 1, 2 and 3) mmolL<sup>-1</sup>. It also investigates the effects of all these concentrations on the development of vegetative buds of date palm Owidi cv. In vitro.

The results of this study revealed that buds cultured on a medium supplemented with SA at 2 mmolL<sup>-1</sup> had the highest fresh and dry weights, which were 12.60 and 1.23 g, respectively, and had significant difference when compared to other treatments, with the exception of SA at 3 mmolL<sup>-1</sup> for the fresh weight.

Furthermore, culture medium supplemented with 2 mmolL<sup>-1</sup> SA or 1 mmolL<sup>-1</sup> MA showed significantly higher buds number, with 20.28 and 19.5, respectively, when compared to the control.

The results indicated that when media was supplemented with MA at all concentrations, the content of proline and phenolic increased significantly, whereas when media was supplemented with SA at all concentrations, the content of proline decreased significantly.

In the elongation stage, SA and MA at all levels significantly increase the length of adventitious shoot buds and the content of chlorophyll and carotene compared to the control., with the highest length observed in SA at 3 mmolL<sup>-1</sup> with 8.8 cm, while with 6.70 and 0.024 µg g<sup>-1</sup> FW, respectively for chlorophyll and carotene in MA at 2 mmolL<sup>-1</sup>.

**Keywords:** Apical bud, chlorophyll, fresh weight, phenol, proline.

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### Introduction

The use of plant tissue culture technologies for large-scale plant multiplication has become more common. Plant tissue culture techniques have recently gained industrial relevance in the areas of plant propagation, disease removal, plant enhancement, and secondary metabolite synthesis, in addition to its use as a research tool (Thorpe, 2007).

Several technical problems may be encountered during the different stages of date palm tissue culture at the laboratory, such as Browning of cultured tissues (Muhsen et al., 2015 ;Al-Mayahi et al.,2020 ), Vitrification of tissues (Muhsen 2007a ;Muhsen et al., 2020 ) and Bacterial and fungal contaminations (Muhsen et al., 2014).