

STIMULATION OF THE ANTIOXIDANT SYSTEM BY THE EFFECT OF VITAMIN C IN THE APICAL MERISTEMATIC TISSUE AFFECTED BY WATER STRESS

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(Received 27 March 2019, Revised 29 July 2018, Accepted 10 August 2019)

ABSTRACT : Experiment with the aim of producing antioxidants (Anti-cancer) enzymes (Superoxide dismutase, Catalase, Ascorbate peroxidase) and non-enzymatic enzymes (Beta carotene, Ascorbate). It was through these compounds inhibiting the cancerous Hydrogen peroxide H_2O_2 effect and Stimulation of the enzymatic and enzymatic non-enzymatic system through the exposure of the plant to water stress, where the stress to stimulate the production of these antibiotics and increased the production of these antibiotics increase its anti-hydrogen peroxide activity through the effect of vitamin C. This process was performed in the meristematic tissues of the cells of the permanent Caraway (*Carum carvi*) and were experimental factors (waterstress factor for 8 days with control period of 4 days) (vitamin C factor and concentrations of 50 and 100 ppm plus control treatment) were designed using a Factorial Randomized Block Design (R.B.C.D) with three replicates and 18 experimental units. The experimental unit area of 2m. The results showed the following: 1. The water stress period of 8 days led to the production of toxic hydrogen peroxide and increased concentration by stress. 2. Stimulation of water stress Production of enzymatic and non-enzymatic antioxidants Merstematmic tissues to inhibit the production and effect of hydrogen peroxide. 3. The effect of vitamin C and increased concentrations had a positive role in inhibiting the production of hydrogen peroxide and increasing the production of enzymatic and non-enzymatic antioxidants. 4. The double interaction between water stress and increased vitamin C concentrations has been instrumental in stimulating the production of enzymatic and non-enzymatic antioxidants.

Key words : Vitamin C, antioxidants, meristematic tissue, caraway, water stress.

INTRODUCTION

The antioxidant system is an internal and natural system within the cell metabolism and is induced as a reaction to the formation of free radicals with the destructive effect of cells, which stimulates the formation of carcinogenic cells produced during vital events or some electrons leaked due to the effect of biological and environmental stresses (Ahmad and Prasad, 2012). The antioxidant system stimulates, activates and produces enzymes or a group of antioxidants resulting from the oxidative stress effect. This system works naturally and is balanced with the intensity of the oxidative stress effect. The sum of the oxidative stress groups between stimulating the production of oxidized free radicals and the antimicrobial system is neutral as long as Conditions for optimal and natural growth (Garcia *et al*, 2012). The

antioxidants are divided into two types: Enzymatic antioxidants and non-enzymatic antioxidants. The most important of these is the superoxide dismutase (SOD), a metal protein enzyme. The most important metals associated with copper, zinc, iron, nickel, and manganese have the role of scavenger (Scavenger) (Superoxide) as it provides proton to interact with superoxide radicals, release oxygen and inhibit the production of hydrogen peroxide. These enzymes are abundant in chloroplasts during photosynthesis (Ahari, 2006) and the enzyme (APX) Peroxidase Ascorbate. This enzyme is found in the plant in conjunction with the iron aggregates in a number of cellular organs such as mitochondria, plastids and cell wall whose function is to rid some compounds of the toxic effect of hydrogen peroxide (Caverzan *et al*, 2014). The cat catalase is one of the most important enzymes and Its activity is an analysis of hydrogen peroxide and its transformation into water. This enzyme is present in the mitochondria (Breusegem and Noctor,