

Poster

Effect of bioestimulant on the antioxidant system of *Solanum Lycopersicum*.

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ABSTRACT

During vegetal growth, Oxidative stress is one of the main causes that affect plant development. Plant subjected to biotic or abiotic stress (drought, heat, UV light, salinity...) generate Reactive Oxygen Species (ROS) inside chloroplasts. ROS cause lipid peroxidation, DNA damage, protein denaturation, carbohydrate oxidation, pigment degradation and deterioration off enzymatic activity, even leading to plant death. To counteract the harmful effects of ROS species, plants have developed an antioxidant system that is based on scavenging free radicals generated by different stresses and eliminating them. This reduces cell and plant damage. Plant bioestimulant is any substance or microorganism applied to plants in order to improve nutritional efficiency, tolerance to abiotic stress and qualitative attributes of the crop, regardless of its nutrient content [3]. They are beneficial by triggering the production of plants defence metabolites. The active principles present in the bioestimulant extracts have great potential for the antioxidants effects. Among the main active ingredients polyphenols, polyalcohols and hydroxybenzoic acids have been described [2].

The objective of this work is to analyse the effects of active principles present in four different Biostimulants produced by Biopharma Research on the tomato metabolism. To do it, *Solanum lycopersicum* cv. Micro-Tom seeds were germinated in long day conditions directly in pots. Plants were grown 21 days until they reach vegetative development stage. Four different Biostimulants were applied by irrigation once a week for two consecutive weeks. One week after the last application, physical, biochemical and molecular parameters during plant growth will be studied to determine the most effective biostimulant. The physical parameters analysed have been: 1) dry and fresh weight of the aerial and subterranean part of the plant; 2) agronomic and nutritional characteristics of tomato; 3) chlorophyll quantification 4) accumulation of hydrogen peroxide in the tissue and 5) total protein. The results showed that biostimulant "BT2" turned out to be one of the most interesting since at the end of the cycle the plant continued to produce flowers and after its application the tomatoes ripened earlier. Tomato plants are highly susceptible to water deficit notably during the growth phase, but also at flowering and during the fruit growth[1]. In the first assay we focused on the analysis of the physical parameters. Now, in the second assay we will induce water stress to the plant and we will apply biostimulant and then we will study hormones production and gene expression of the tomato antioxidant system. We have observed that in depend on the composition of the bioestimulant, they will differently affect plant development. It has been observed that the plants treated with biostimulants reduce H₂O₂ accumulation in compare the control plants.

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