



VERSÃO PROVISÓRIA

**II SIMPÓSIO LATINO-AMERICANO SOBRE
BIOESTIMULANTES
NA AGRICULTURA**

&

**IX REUNIÃO BRASILEIRA SOBRE
INDUÇÃO DE RESISTÊNCIA
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HUMIC SUBSTANCES REGULATE AUXIN-RELATED GENES AND PLASMA MEMBRANE H⁺-ATPASE ACTIVITY DURING MAIZE ROOT DEVELOPMENT

/ Substâncias húmicas regulam genes relacionados à auxina e atividade da H⁺-ATPase da membrana plasmática durante o desenvolvimento da raiz do milho

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The use of biostimulants in agriculture increased and showed several benefits for crops. Humic Substances (HS)-rich biostimulants changes root morphology, however, a more in-depth approach is need to comprehend plant responses to different biostimulants. In this work, we evaluated maize seedlings physiological and molecular responses of a commercial HS-based biostimulant in order to comprehend its physiological and molecular responses. Maize seeds were germinated for four days and transferred to nutrient solution in a floating system for acclimation for seven days. Leonardite extract biostimulant was added (54. 4 µL L⁻¹) and the plants stayed at the growth chamber in controlled conditions for more seven days. Maize plants treated with the HS-biostimulant presented an increase in root surface area, shoot and root dry weight, but no significant alterations on macro and micronutrient content. Humic substances increased ATPase activity by 2.2 times and consequently stimulated the root development. Moreover, a pairwise comparisons of the RNA-seq data of transcriptomic profiles of maize root and shoot, identified a total of 122 for root and 120 for shoot differentially expressed genes between treated and control plants. On the basis of the putative function of the isolated differentially expressed genes, HS-biostimulant enhanced plant responses related to different hormones production and transport, ATP-ase activity and root development.

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