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Kaolin spray induces changes in ABA and IAA immunodistribution in olive leaves

C Brito^{1*}, L-T Dinis¹, A Luzio¹, M Meijón², M Escandón², E Silva¹, A Gonçalves¹,
M Ângelo Rodrigues³, J Moutinho-Pereira¹, C Correia¹

1 CITAB - Centre for the Research and Technology of Agro-Environmental and Biological Sciences, Universidade de Trás-os-Montes e Alto Douro, Apt. 1013, 5000-801 Vila Real, Portugal

2 Plant Physiology, Department B.O.S., Faculty of Biology, University of Oviedo, Oviedo, Asturias, Spain;

3 CIMO - Mountain Research Centre, Polytechnic Institute of Bragança, Bragança, Portugal

*cvqbrito@utad.pt

The climate change scenarios predicted the accentuation of drought and high temperature events during the summer season in the Mediterranean region, coming up harmful consequences to important crops of this region, such as olive tree (*Olea europaea* L.). Stress conditions often stimulate changes in plants production, distribution or signal transduction of phytohormones as a response, then modifying their physiology and biochemistry. Kaolin (KL) is a reflecting clay that applied on leaves surface reduce the common damages promoted by heat load and high irradiance levels, being important to test its effect on olive tree hormonal dynamics and physiological parameters. Olive trees of a rainfed orchard in Northeast Portugal, were sprayed with kaolin 5% (KL) and water (C). The immunodistribution of two hormones, abscisic acid (ABA) and indoleacetic acid (IAA), and some physiological and growth responses were accessed. The ABA signal was substantially more pronounced than the IAA signal in all the analyzed leaves, concomitant with the stressful conditions of which these plants were subjected. In general, ABA signal showed a uniform distribution throughout the leaf in both treatments. However, its intensity was higher in C than in KL-sprayed leaves, reflecting the better water status and higher stomatal conductance of the last plants. While in C leaves was observed a uniform distribution of IAA signal trough the leaf limb and an almost absence of signal in the main vascular tissues, in KL-sprayed leaves was observed a higher signal intensity in the main vascular tissues and upper palisade parenchyma. These data suggest its transport and an active growth in KL plants, concomitant with the higher increase of canopy volume. Thus, immunodetection appears to be an efficient tool to understand the translocation of IAA and ABA in plants treated with abiotic stress alleviating products and clarify their role in regulating the physiological responses.