sociedadespañola de BIOLOGÍA de PLANTAS

Fitohormonas
2023, Segovia

Libro de Abstracts

XVI CONGRESO FITOHORMONAS

METABOLISMO Y MODO DE ACCIÓN

2023, Segovia

sociedadespañola de BIOLOGÍA de PLANTAS

CSIC
Consejo Superior de Investigaciones Científicas

CBGP Centro de Biotecnología y Genómica de Plantas
UPM-INIA/CSIC
Excelencia Severo Ochoa 2022 - 2025

Os damos la bienvenida al XVI Simposio de *Fitohormonas: Metabolismo y modo de acción*, de la Sociedad Española de Biología de Plantas

Después de un parón por la pandemia del Covid19, el Grupo de Fitohormonas de la SEBP celebrará este año, 2023, su reunión en el Convento de Mínimos de Segovia de los días 19 al 21 de abril.

En esta edición contaremos con la conferencia invitada impartida por el Dr Alain Goossens, quien nos dará una visión de cómo las plantas han desarrollado diferentes rutas para controlar el metabolismo en respuesta a cambios durante el desarrollo y en respuesta a diferentes estímulos ambientales. De forma particular, su seminario se centrará en el papel del ácido jasmónico para controlar finamente el balance entre crecimiento y respuesta de defensa frente a patógenos.

En este simposio se han seleccionado dos conferencias plenarias y 28 conferencias orales, donde se dará la posibilidad de exponer y discutir el papel de las fitohormonas durante el desarrollo de las plantas y en respuesta a factores abióticos y bióticos de la mayoría de los laboratorios participantes. Sin duda, en este congreso tendremos la oportunidad de asistir a los últimos avances científicos y tecnológicos de los diferentes grupos que trabajan en el campo de las hormonas vegetales de forma directa o, de manera indirecta, por la vinculación de las mismas en el proceso fisiológico de estudio.

En esta edición, cabe resaltar la gran participación de investigadores jóvenes y el haber incluido por primera vez la posibilidad de presentar pósters en formato digital con el fin de organizar un congreso más sostenible y dinámico. Agradecemos al Comité científico su trabajo a la hora de seleccionar las exposiciones orales teniendo en cuenta su calidad y para que estuviesen representadas las diferentes temáticas de estudio relacionadas con las fitohormonas. El Comité científico también seleccionará las presentaciones orales y los pósteres más destacados, que serán premiados al final del simposio.

Esperamos que este simposio sea del agrado de todos los asistentes y que tenga una repercusión positiva en vuestras investigaciones.

Un fuerte abrazo del comité de organización

Comité organizador

Juan Carlos del Pozo Benito (CBGP, INIA/CSIC), Andrea Chini (CNB, CSIC) y Luis Oñate (UPM)

Comité científico

Catarina Merchante (UMA), Pilar Cubas (CNB, CSIC), Concha Gómez-Mena (IBMCP, CSIC), Sara Izquierdo (Universidad Jaume I) y Francisco Pérez-Alfocea (CEBAS, CSIC)

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Abscisic acid signalling is essential for citrus acclimation to cold stress

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Climate change has drastically increased extreme environmental phenomena such as cold waves, generating important losses in agriculture. In this new scenario, it seems necessary to study plant strategies to survive to low temperatures and, based on this knowledge, design palliative treatments to reduce economic losses. Citrus species (with a subtropical origin) are considerably affected by cold, hence the importance of searching for new protection strategies for these crops. To this aim, Carrizo citrange (CC) and Cleopatra mandarin (CM), two citrus rootstocks with similar tolerance to low temperatures, were exposed to a cold treatment, with a 16h photoperiod at a 10/4 ºC day/night temperatures during 7 days. In response to the stress, both rootstocks significantly reduced their photosynthesis, transpiration and stomatal conductance. In addition, the leaf abscisic acid (ABA) content increased with respect to control plants in both citrus rootstocks after 3 days of cold although in CM plants ABA levels decreased to control values at the end of the stress period. Indoleacetic acid (IAA) levels increased in both rootstocks after 7 days of stress and a similar increase was observed in proline content. These results indicate that although citrus plants seem to slow down their metabolism under low temperatures, there are active metabolic pathways that coordinate plant protective mechanisms against this abiotic stress. The rapid ABA induction in both rootstocks suggests that this hormone is key in the cold acclimation process, but also the subsequent increases in IAA and proline could indicate a common adaptive response in citrus where both metabolites would be essential.

This work has been funded by grants UJI-A2021-10 and POSDOC/2020/18 from Jaume I University. Funding was also obtained from MCIN/AEI/10.13039/501100011033 and by the European Union Next Generation (TED2021-129795B-I00) and AGROALNEXT program (funded by MCIN, European Union Next Generation EU -PRTR-C17.I1- and Generalitat Valenciana).

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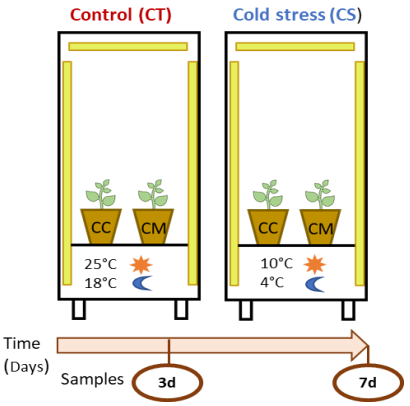
Introduction

Climate change has drastically increased extreme environmental phenomena such as cold waves, generating important losses in agriculture. In this new scenario, it seems necessary to study plant strategies to survive to low temperatures and, based on this knowledge, design palliative treatments to reduce economic losses. Citrus species (with a subtropical origin) are considerably affected by cold, hence the importance of searching for new protection strategies for these crops. To this aim, Carrizo citrange (CC) and Cleopatra mandarin (CM), two citrus rootstocks with similar tolerance to low temperatures, but also probably with different strategies to survive were used.

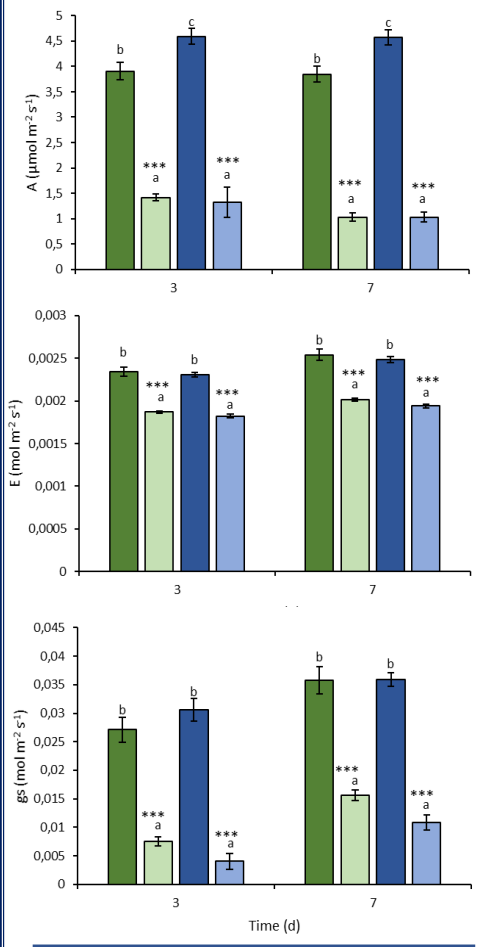
Experimental design



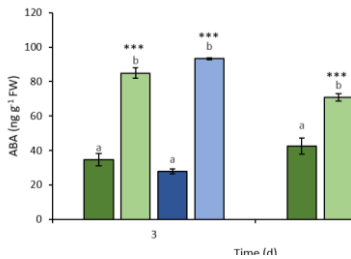
Results

CC CT CC CS

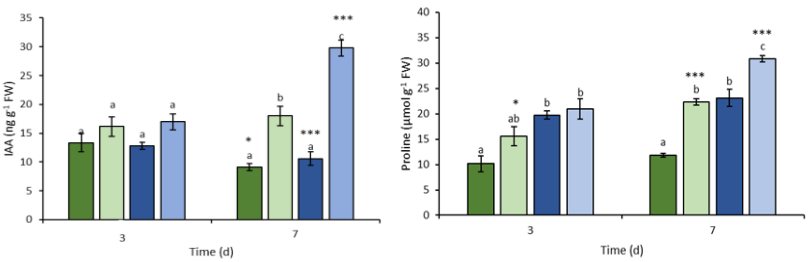
CM CT CM CS



In response to the stress, both rootstocks significantly reduced their photosynthesis, transpiration and stomatal conductance



Abscisic acid (ABA) content increased with respect to control plants in both citrus rootstocks after 3 days of cold.



Indoleacetic acid (IAA) levels increased in both rootstocks after 7 days of stress and a similar increase was observed in **proline** content.

Conclusion

The rapid ABA induction in both rootstocks suggests that this hormone is key in the cold acclimation process, but also the subsequent increases in IAA and proline could indicate a common adaptive response in citrus where both metabolites would be essential.

COLD → ABA → IAA and Proline

Adaptive response

Acknowledgments

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