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LXII ANNUAL MEETING OF ARGENTINE SOCIETY OF CLINICAL INVESTIGATION (SAIC)

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extracellular Ca^{2+} influx and the activation of protein-kinases but not NO. Additionally we showed that NO_2-OA increased expression of plant-defense related genes, induced cell death and reduced total content of glutathione.

These results indicate that NO_2-OA triggers modifications of tomato cell physiology leading to responses associated to plant pathogen interaction, revealing its possible role in plant defense as a signal molecule.

(1792) **MOLECULAR BASES OF NON-SYNONYMOUS POLYMORPHISMS OF PHYTOCHROME B GENE IN LIGHT HYPOSENSITIVE RESPONSES OF PATAGONIA GENOTYPE**

Maria Jimena Ruiz Diaz (1), Maria Jimena Ruiz Diaz (1), Maximiliano Sanchez Lamas (2), Pablo Cerdan (2), Javier Botto (1)
(1) IFEVA. (2) LELOIR.

The plant model, *Arabidopsis thaliana*, has a natural distribution in Eurasia and North Africa. Our research group collected seeds of introduced populations of this species (PAT) in the Patagonia, Argentina. Physiological studies in controlled laboratory conditions showed that PAT is hyposensitive to red light and in response to low red/far-red ratios occurring when plants grow in dense vegetation canopies. We hypothesize that polymorphisms in phytochrome B gene (*PHYB)* is responsible for the PAT phenotype. To gain insight on the molecular causes of light hyposensitive in PAT, we studied the contribution of genetic variation on the promoter and four non-synonymous polymorphisms in the coding region of *PHYB*. We are generating transgenic plants of different versions of *PHYB*-PAT expressed in *phyB* mutant background, and over-expressing the *PHYB*-PAT promoter in PAT and Col-0 backgrounds. The material generated will be characterized under different light conditions to evaluate the contribution of each *PHYB* polymorphism on plant phenotype. Advances in this line of work will be presented.

Keyword: Phytochrome B, polymorphisms, Sahde advoidance

(313) **BIOCHEMICAL CHARACTERIZATION OF TWO GROUP III-MEMBERS OF THE *Solanum tuberosum* CALCIUM DEPENDENT PROTEIN KINASE (CDPK) FAMILY**

Marcelo Sciorra, Elisa Fantino, Franco Santin, Verónica Giammaria, Rita María Ulloa
INGEBI-CONICET

Abstract: As sessile organisms, plants have developed complex signal transduction pathways to cope with the environmental fluctuations to which they are exposed during their life cycle. Calcium is a ubiquitous messenger involved in the signaling of environmental stimuli, whose oscillations are decoded by different sensors. Calcium-dependent protein kinases (CDPKs) are key components of calcium regulated signaling cascades in plants. In this work, isoforms StCDPK22 and StCDPK24 from the CDPK family of *Solanum tuberosum* were characterized. Both isoforms belong to Group III, and contain only three EF-hand sites in their calmodulin-like regulatory domain (CLD) instead of four sites like all other members of the family. StCDPK22 encodes a 59.4 kDa protein (524 aa; pI 7.6) while StCDPK24 encodes a 60 kDa protein (532 aa; pI 6.12), both with an N-terminal variable domain (NTV) which presents myristoylation and palmitoylation consensus sites. *StCDPK22* gene (circa 4 kb) is localized in chromosome 10, while *StCDPK24* gene (circa 5 kb) is localized in chromosome 11. Both isoforms share the eight exons and seven introns structure and have 80% identity and 89% similarity at the protein level. According to RNAseq data from the potato genome StCDPK22 and StCDPK24 expression is ubiquitous, however StCDPK22 transcripts are much more abundant in stolons, leaves, shoots, tubers and roots. The recombinant 6xHis:StCDPK22 and 6xHis:StCDPK24 were obtained and kinase assays were performed. Although both isoforms are active kinases, StCDPK24 activity is ten-fold higher. Kinetic parameters were determined for StCDPK24. We observed that this kinase can use either Mg^{2+} or Mn^{2+} as cofactor and full activity was obtained with 1μM calcium, however kinase activity was also observed in the presence of 10 mM EGTA suggesting that calcium may not be a prerequisite for activity. However, in vitro assays indicate that calcium is required for autophosphorylation.

Keywords: CDPK, Potato, kinase activity

(691) **ROLE OF GASOTRANSMITTER HYDROGEN SULFIDE (H_2S) IN PLANT IMMUNE RESPONSES.**

Denise Scuffi, Luciano Di Fino, Juan Martin D'ambrosio, Ana Maria Laxalt, Carlos García-Mata
IIB-CONICET-UNMdP.

Abstract: As a member of the family of gasotransmitters, hydrogen sulfide (H_2S) is endogenously synthesized and has specific molecular targets. In plants, H_2S is produced by the enzyme L-cysteine desulfhydrase 1 (DES1) which degrades L-cysteine into H_2S, piruvate and ammonia. H_2S participates in several plant processes such as stomatal closure. Although the study of H_2S in plants has increased in the last years still much remains to be discovered.

Stomata are pores surrounded by a pair of cells, guard cells, through which plants regulate the gaseous exchange with the environment and the loss of water by evapotranspiration. Moreover, when open, stomatal pores are "access points" for pathogens, therefore the regulation of stomatal closure is considered a first immunity barrier. So the stomatal pore regulation is a key process for carbon and water homeostasis and also for plant defense.

In this work we study the role of H_2S in pathogen-induced stomatal closure. We made use of mutant and silenced *A. thaliana* plants in specific genes as H_2S-source *DES1* and those that participate in immune-responses such as the NADPH oxidase RBOHD and the phosholipase C2 (PLC2). Experiments were performed in Arabidopsis isolated epidermal peels. Stomata were preincubated in opening buffer for 3 hours under light and subsequently incubated with the different treatments on the same buffer. Stomatal aperture assays show that bacterial elicitor flg22-dependent stomatal closure was partially blocked by 200 μM of H_2S scavenger, Hypotaurine (Dunn's;P<0.05). Moreover, preliminary results show that *des1* mutant plants do not close stomata under 5 μM flg22 treatment (Dunn's;P<0.05). On the other hand, plants lacking *rbohD* or *plc2* genes do not close the stomata when epidermal peels are treated with 100 μM of H_2S donors (Dunn's;P<0.05). All together the presented data strongly support H_2S as a novel component of flg22 signaling in guard cells.

Key words: H_2S, flg22, stomata.

(1486) **BIOLOGICAL EVALUATION OF 24-HYDROXY-4-CHOLEN-3-ONE AS A POTENTIAL TOOL FOR CONTROLLING ROOT KNOT NEMATODE INFECTION**

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The root-knot nematode *Meloidogyne incognita* is one of the most damaging parasites because it infects almost all cultivated plants. Second-stage juveniles (J2) penetrate the root and migrate to the vascular cylinder inducing the development of root knots. J2 becomes sedentary and undergoes three molts to become an adult female that lays eggs. After egg eclosion, J2 larvae move in the soil, locate root tips and initiate a new cycle of infection. We have