BOOK of ABSTRACTS

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(23rd SPPS Meeting)

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Institute for Biological Research "Siniša Stanković"
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Enzymatic component of antioxidative system in succulent plant *Tacitus bellus* as a response to hemibiotroph *Fusarium verticillioides* infection *in vitro*

PP2-5

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Fungi and plants interact in different ways, creating a scale of associations. Hemibiotrophic fungi represent the most interesting group, as they use sequential biotrophic and necrotrophic infection strategies. The co-evolution of plant and fungal life-styles has not been well characterized. We present changes of enzymatic component of antioxidative system in succulent plant *Tacitus bellus* that specifically correspond to subsequent phases (spore germination, biotrophic phase, and necrotrophic phase) of hemibiotroph *Fusarium verticillioides* infection. *T. bellus* response to *F. verticillioides* spore germination was characterized by transient increase in catalase (CAT), but decrease in superoxide dismutase (SOD) and peroxidase (POD) activity. During biotrophic phase of *F. verticillioides* infection, when hyphae spread intercellularly in epidermal and mesophyll tissue, host antioxidative system was suppressed. The transition from biotrophic to necrotrophic phase (inter and intracellular colonization and sporulation) triggered the host plant cells to create a highly defensive environment: CAT, SOD and POD activities were significantly stimulated, slowing, or even currently arresting, colonization of *T. bellus* mesophyll cells. CAT, showing the most pronounced activity increase, could be suggested as the main enzyme responsible for slowing the progression of necrotrophic phase of *F. verticillioides* growth. However, contrary to host CAT and SOD which isoenzyme profile didn't change, new highly acidic POD isoforms replaced the two mildly acidic isoforms, suggesting their specific role in slowing the progression of infection. Presented results add to knowledge of events and mechanisms related to hemibiotrophic fungi pathogenicity in succulent plants grown under high relative humidity, similar to conditions in greenhouse.

Keywords: *Tacitus bellus*, *Fusarium verticillioides*, fungal leaf infection, antioxidative enzymes

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