SEARCH FOR AN IN VITRO ASSAY TO TEST THE TOLERANCE/SUSCEPTIBILITY DEGREE OF DIFFERENT RICE CULTIVARS TO THE BLAST PATHOGEN, \textit{PYRICULARIA GRISEA}

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When attacked by pathogens such as fungi and other microorganisms, higher plants start various defence responses: production of phytoalexins and other phenolic compounds, synthesis of antifungal proteins, generation of reactive oxygen species and cell wall lignification are only a few examples. The success or failure of the plant defence may depend on the readiness and intensity with which such responses are started. Most of these defence reactions might be reproducible in suspension-cultured cells treated with specific substances extracted from pathogens, called elicitors.

Blast is the most important rice disease worldwide, and the most dangerous in Italy. It is caused by \textit{Pyricularia grisea}, an Ascomycete potentially very variable and capable of producing numerous races with different pathogenicity towards rice cultivars.

Aim of this work is to assess whether in cell cultures of rice cultivars characterized by different degrees of in vivo tolerance to blast, treated with elicitors prepared from various \textit{Pyricularia grisea} isolates, it is possible to use PAL (phenylalanine ammonia lyase, a key-enzyme in the responses to pathogen's attack) induction, accumulation of specific defence phenolic compounds, or other biochemical or molecular markers as parameters for evaluating the resistance / susceptibility degree of a rice cultivar to a given Pyricularia grisea isolate and, conversely, the pathogenicity of a fungus isolate towards a given rice cultivar. If effective, moreover, such a system might be used to assist breeders engaged in the genetic improvement of rice resistance to blast, in the early evaluation of a cross progeny.

Preliminary results show that in most cases PAL or phenolics accumulation levels raise upon elicitation, but do not appear to be differentially induced in cell cultures of susceptible or tolerant rice cultivars. Additional experiments using longer times of cell treatment with the elicitors, other potential markers, such as chitinase or PGIP (poly galacturonase inhibitor protein) induction, as well as an alternative experimental system (leaf pieces floating on elicitor suspensions) are under way.