P80. Iron chelation by natural and nature-inspired catechols inhibits early development of the rice blast fungus, *Pyricularia oryzae*

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Pyricularia oryzae is a global threat to cereal cultivation, causing a highly destructive blast disease in various cereal crops, including rice and wheat. This plant pathogen is managed mainly by fungicides, whose use is drastically reduced due to strict regulations and increasingly present fungicide resistance. Therefore, identifying new targets for fungicide development and using natural or nature-inspired molecules for plant pathogen control are necessary. Ferroptosis was recently described as a new form of a regulated, iron-dependent cell death, which plays a key role also during *P. oryzae* infection. In particular, the iron-dependent death of conidial cells during the germination and recycling of their content into the appressorium is necessary for the infection of the host plant cells. The uncovered correlation between appressorium development and iron homeostasis evidenced iron sequestration by siderophores as a promising new strategy to prevent *P. oryzae* infection. Siderophores are low molecular weight chelators that can transport the insoluble iron (Fe^{3+}) into the cell, which is then released in Fe^{2+} soluble form. To better understand the role of siderophores and iron homeostasis in the appressorium development and virulence of *P. oryzae*, we prepared a collection of catechol-containing natural siderophores and their derivatives. We observed that the catechol moiety is indispensable for the chelating activity of synthesized molecules. Moreover, a good correlation between the ability to chelate iron and the inhibition of appressorium development in the rice blast fungus was obtained.

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