عنوان مقاله:

Riboflavin Induces Different Defense Responses against Pyricularia oryzae in Improved and Traditional Rice (Oryza sativa L.) Cultivars

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نویسندگان:

T. A. Aghajanzadeh - *Department of Biology, Faculty of Basic Science, University of Mazandaran, Babolsar, Islamic Republic of Iran.*

O. Jazayeri - *Department of Molecular and Cell Biology, Faculty of Basic Science, University of Mazandaran, Babolsar, Islamic Republic of Iran.*

خلاصه مقاله:

Riboflavin (vitamin B۲) affects plant growth and development and participates in a variety of redox processes that affect plant defense responses. Two rice cultivars Fajr (improved) and Tarom Mahali (traditional) were foliar sprayed with increasing concentrations of riboflavin (۰, ۰.۵, ۱, ۱.۵ and ۲ mM) and subsequently infected by Pyricularia oryzae. Then, leaves were collected at ۰, ۲, ۴, ۶ and ۸ days after infection and activity of Peroxidase (POD), PolyPhenol Oxidase (PPO), and Phenylalanine Ammonia Lyase (PAL) were measured. Results revealed that lesion size and percentage of infected rice plants in Fajr was higher than Tarom Mahali. In addition, riboflavin-induced resistance was higher in Fajr than in Tarom Mahali due to higher activity of POD, PPO and PAL in Fajr than Tarom Mahali, especially upon exposure of plant to ۲ mM riboflavin. The intensity of the bands of peroxidase isoenzymes with low molecular weight was enhanced by increasing concentrations of riboflavin in both rice cultivars, while elevated riboflavin concentration caused the synthesis of three new isoenzymes in Fajr (g, h, i) and one (f) in Tarom Mahali cultivars. It can be concluded that Fajr is more sensitive to infection of P. oryzae than Tarom Mahali. In addition, the activity of POD, PPO, and PAL enhanced intensity of peroxidase isoenzymes bands. Also, the synthesis of new isoenzymes by riboflavin showed that riboflavin-induced resistance was more effective in Fajr than in Tarom Mahali.

کلمات کلیدی:

Fajr cultivar, Peroxidase isoenzymes, Phenylalanine ammonia lyase, Polyphenol oxidase, Tarom Mahali cultivar,.

برنج, ایزوآنزیم های پراکسیداز, فنل آلانین آمونیا لیاز, پلی فنل اکسیداز