

SID



ابزارهای پژوهش



سرویس ترجمه تخصصی



کارگاه‌های آموزشی



بلاگ مرکز اطلاعات علمی



سامانه ویراستاری STES



فیلم‌های آموزشی

سامانه ویراستاری (ویرایش متون فارسی، انگلیسی، عربی)

کارگاه‌ها و فیلم‌های آموزشی مرکز اطلاعات علمی



روش تحقیق کمی

روش تحقیق کمی



آموزش مهارت‌های کاربردی در تدوین و چاپ مقالات ISI

آموزش مهارت‌های کاربردی در تدوین و چاپ مقالات ISI



آموزش نرم افزار Word برای پژوهشگران

آموزش نرم افزار Word برای پژوهشگران

Evaluation of Phenylalanine ammonia lyase and Lipoxygenase activities in wheat cultivars- *Fusarium graminearum* interaction

Nima Khaledi, Parissa Taheri and Mahrokh Falahati-Rastegar

Department of Plant Protection, Faculty of Agriculture, Ferdowsi University of Mashhad, Mashhad, Iran.

khaledi.nima@stu.um.ac.ir

Plants are exposed to different stresses and have evolved complex strategies to counter these threats that involves recognition, activation of signal transduction pathways, and the production of proteins and metabolites with different roles in defense. Plant defense in response to pathogens is regulated by a complex defense network of signaling pathways that involve the phytohormones salicylic acid (SA), jasmonic acid (JA), and ethylene (ET) play pivotal roles in the stress perception and transduction. Activation of plant defense signaling pathways depends on the pathogen lifestyle, with positive or negative crosstalk between the SA and JA/ET pathways regulated to ensure an appropriate and effective defense responses. Phenylalanine ammonia lyase (PAL) is a key enzyme of the phenylpropanoid pathway in plants, which plays an important role in biosynthesis of phenolics, flavonoids and lignin. Changes in PAL activity plays a pivotal role in phenolic compounds synthesis in response to different stresses. LOX may be involved in physiology and plant defense processes through generate signal molecules including JA and its derivatives which contribute to regulate jasmonic acid biosynthesis. In this research, the activities of PAL and LOX enzymes involved in wheat cultivars basal resistance to *F. graminearum* in the seedlings and spikes of susceptible (Falat) and partially resistant (Gaskozhen) cultivars were investigated at various time points after inoculation. PAL activity was determined as the rate of conversion of L-phenylalanine to trans-cinnamic acid at 290 nm. Also, LOX activity was measured based on absorption at 234 nm of the conjugated dienes formed when linoleic acid was oxidized in the presence of lipoxygenase. Results showed that higher level of PAL and LOX activities were observed in Gaskozhen cultivar compared to Falat plants. At 48 hours post inoculation (hpi), the highest level of PAL and LOX activities were observed in the seedlings of Gaskozhen compared to Falat cultivar. Enzymes activities in Falat cultivar increased to a lower extent and later compared to Gaskozhen plants and reached to its maximum level at 96 hpi. PAL activity of spikes slightly increased at flowering stage but LOX activity slightly increased until milk stage and then decreased in consecutive growth stages, following the inoculation with *F. graminearum*. The results showed that the PAL and LOX enzymes, as major markers of phenylpropanoid and octadecanoid pathways, are involved in defense reactions of wheat plant against *F. graminearum*.

Keywords: Phenylalanine ammonia lyase, Lipoxygenase, *Fusarium*.

SID



ابزارهای پژوهش



سرویس ترجمه تخصصی



کارگاه‌های آموزشی



بلاگ مرکز اطلاعات علمی



سامانه ویراستاری STES



فیلم‌های آموزشی

سامانه ویراستاری (ویرایش متون فارسی، انگلیسی، عربی)

کارگاه‌ها و فیلم‌های آموزشی مرکز اطلاعات علمی



روش تحقیق کمی

روش تحقیق کمی



آموزش مهارت‌های کاربردی در تدوین و چاپ مقالات ISI

آموزش مهارت‌های کاربردی در تدوین و چاپ مقالات ISI



آموزش نرم افزار Word برای پژوهشگران

آموزش نرم افزار Word برای پژوهشگران