عنوان مقاله:

Catalase and Metallothionein genes expression analysis in wheatcultivars under drought stress condition

محل انتشار:

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خلاصه مقاله:

Drought stress is one of the serious problems that restricted agronomic plant production worldwide. Inmolecular level, the harmful effect of drought stress is mostly caused by producing of large amount ofreactive oxygen species (ROS). Catalase and Metallothionein genes have a crucial role to mope the hydrogenperoxide (H2O2) resulting reducing oxidative damage. In this research the gene expression pattern of Catalaseand Metallothionein was studied in response to drought stress treatments. The treatments included - 0.3 bar, -0.9 bar, - 8 bar and -12 bar and wheat varieties included Zagros (drought tolerant), Moghan (semi- tolerant)and Tajan (drought sensitive). The amount of cellular oxidative levels (TBARM) increased steady byintensify of drought stress levels. Real time PCR analysis showed different expression pattern for catalase andmetallothionein encoded genes. Catalase gene expression was increased during drought stress up to -8 bar andreduced in -12 bar treatment, in all cultivars specially in Tajan cultivar. Metallothionein gene expression waslinearly reduced during different levels of drought treatments especially in Zagros and Tajan cultivars. Themost activity for both genes has observed in Zagros cultivar at -0.9 bar treatment. Whereas, Moghan cultivarshowed most transcription for both genes at -8 bar treatment. Overall gene activities, content of chlorophyll(a, b) and whole plants appearance declined by high level of drought stress e.g. -12 bar treatment in allcultivars particularly in Tajan variety. Whereas, the moderate levels of drought stress treatments inducedgenes activitiy.

کلمات کلیدی:

Wheat, Reactive oxygen species, Gene expression, Chlorophyll, Drought stress