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Abstract

Characterization of Oryza sativa Root Germin-like Protein Gene 1 Promoter in a Model Plant

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Abstract:

TGermins and Germin-like proteins (GLPs) play important role against various stresses. Our research group is working on the characterization of Germin and Gemrin-like Proteins. Presently, promoter region of Oryza sativa Root Germin-like Protein 1 (OsRGLP1) gene was fused with GUS reporter gene and designed expression construct was used for plant (Nicotiana tabacum) transformation. Transgenic plants were analyzed under wounding, salt, drought and ABA by RT-PCR. In wounding stress a gradual increase in GUS activity with time was observed. In RT-PCR highest activity in leaves was seen after 5 h with 4 fold increase in GUS transcript level as compared to control. In salt stress transgenic plants, highest activity was noted after 24 h at 250 mM showing 3-fold increase in GUS activity. In drought stress transgenic plants were grown on different concentrations of PEG solutions and GUS activity was noted after 24 h, in which highest expression was observed at PEG 30 % both visually and in RT-PCR data by showing 25-fold change in GUS transcript level. Similarly, in ABA stress transgenic plants were treated with a range of different concentrations of ABA and the GUS activity was observed after 24 and 48 h in which highest activity was noted after 48 h at 450 µM which was 28-fold change. Moreover, histochemical analysis showed strong GUS activity in different parts of the transgenic plants. Induction of this promoter showed its ability of driving gene expression under these stresses, which carries particular importance in the production of agronomically important transgenic crops..

(Up to 250 words)

Biography:

Tariq Mahmood is working as a professor in the Department of Plant Sciences, Quaid-i-Azam University, Pakistan. He remained the chairman of the Department from 2012 to 2018. He has published more than 130 research papers in reputed journals carrying impact factor and has been serving as reviwerer/ editorial board member of around 57 international journals. He has supervised 18 PhD and 88 MS stduents. He has completed 10 research projects while 3 are in process. He has been awarded Young Researcher Award-QAU-2013, Annual Research Productivity Awards from 2011-2018, Best Teacher Award for the year 2014 by Higher Education Commission, Pakistan and Abdus Salam prize in Basic Sciences 2017 in the field of Biology by The Third World Academy of Sciences. Prof. Mahmood remained among the top 3 under-forty Scientists as published in the Directory of Productive Scientists of Pakistan (Published by the Pakistan Council for Sciences and Technology). He is also honored by the membership of Pakistan Academy of Sciences.

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