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Rice tungro bacilliform virus (RTBV) based virus induced gene silencing (VIGS) for functional genomics in rice and study of RTBV gene products as a silencing suppressor

Ravi Kant
Department of Plant Molecular Biology, University of Delhi South Campus, India

Rice is the staple food of about half the world's population and it is the second largest produced cereal in the world. The annual loss of rice yield from biotic and abiotic stresses are 30 -60% globally, therefore increase in the rice production through crop improvement and defense against various biotic and abiotic stresses is the major objective for researchers to meet the high yield and cost effective rice for developing countries. Rice genome is sequenced and its many more gene functions are yet to be elucidated. Virus induced gene silencing (VIGS) is one of the promising loss of function technology for functional genomics, which exploits the RNA silencing pathway to dissect out the characteristic function of plant genes. Rice tungro bacilliform virus (RTBV) based VIGS resulted in enhanced silencing of a rice plant reporter gene Phytoene desaturase (pds) that led to strong photo bleaching phenotype in leaves with slight modification in VIGS protocol. To understand the plant- pathogen interaction is the prime target in crop improvement, plant viruses encode specific proteins as a counter-defense against RNA silencing by host plants, these specific proteins are known to RNA silencing suppressors. These viral suppressor proteins bind at various key points in RNA silencing pathway and block the pathway in order to protect viral RNA from degradation. Here, study of silencing suppressor activity of RTBV genes resulted in the interference of RNA silencing in N. benthamiana. Fishing out the viral suppressors could assist in crop improvement by targeting the viral suppressor proteins through genetic engineering.

Biography

Ravi Kant is doing Ph.D from Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi, India under the supervision of Prof. Indranil Dasgupta. He has presented posters in international symposium " 100 years of rice science and looking beyond" held in Tamilnadu agricultural university (TNAU), Coimbatore, India in January 2012 and in National Science Day held in University of Delhi South Campus, New Delhi, India. He has completed my B.Sc. from Banaras Hindu University (B.H.U.), Varanasi, India and M.Sc. from Himachal Pradesh University, Shimla, India.

ravikanthpu@gmail.com