Cell wall integrity checkpoint protein Rlm1p as novel transcriptional regulator of F-box encoding gene *SAF1* of *S. cerevisiae* during stress

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F-box motif containing proteins are shown as the component of protein degradation machinery where they function as substrate recruiting factor. Through substrate recruitment and subsequent degradation of recruited substrate by ubiquitin mediated proteasome machinery they regulate variety of cellular functions such as signal transduction and cell cycle transition. The *S. cerevisiae* cells upon nutrient stress enter into the quiescence stage; at molecular level, this transition is mediated through the recruitment of adenosine deaminase factor Aah1p by the F box motif containing protein Saf1p which constitute the SCF E3 ligase. Here, we have investigated the regulation of the *SAF1* gene by various transcription factors during stress. For this we have analyzed the gene expression profiling database (GEO), transcriptional regulation databases and yeast stress expression database. The gene expression profiling database indicated that *SAF1* gene expression is up regulated during hypoxia and the drug treatment. The subsequent analysis of transcription factors regulating the *SAF1* gene expression revealed RLM1 as novel transcription factor regulating the *SAF1* and its substrate *AAH1* gene expression during stress condition. The yeast stress expression database analysis revealed that in variety of stress conditions (drug, pH, temperature, microbial toxin and inorganic compound) the *RLM1* and *SAF1* were constitutively over expressed at log2 FC>1 and adjusted p-value <0.05 setting in comparison to control cells. The *RLM1* gene has been implicated in the cell wall integrity checkpoint pathway. It has also been reported that RlmA deficient strains lacks cell wall organization and cell growth in A. fumigatus. Based on the analysis we hypothesized that double knockout of *SAF1* and *RLM1* genes cells may be resistant to stress condition which need to be tested experimentally.

Biography

Vijeshwar Verma has completed his PhD in IIIM (former RRL, Jammu) in 1980. Later the institute offered him the position of Scientist and thus he shifted to the Institute in 1982. He was the pioneer member of the group which started a Genetic Engineering Unit in the institute to undertake research in the field of Recombinant DNA in 1986. Presently, he is the Director of School of Biotechnology and Dean of College of Sciences. He is a renowned Researcher in the field of Microbial Biotechnology and has large number of publications and patents to his name. He is a Fellow of Association of Microbiologists of India and Member of Indian National Science Academy. He has spent a significant part of his career at Indian Institute of Integrated Medicine (formerly Regional Research Laboratory) -CSIR, Jammu. This unit later got christened as Division of Biotechnology of which he was the Chairman at the time of taking VRS in 2007. During this period of about 25 years, he had Post-doc experience in the field of Recombinant DNA, Fermentation and General Molecular Biology in various prestigious laboratories/institutes in Germany, England & France, where he learnt a lot about the subject.

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