

2nd World Biotechnology Congress

December 04-05, 2017 | Sao Paulo, Brazil

Un-regulatory actions of *ecdB* transcription factor present in echinocandin B biosynthetic gene cluster

Arvind Kumar and Antresh Kumar
Central University of South Bihar, India

Statement of the Problem: Candida infection is a major threat for, immunocompromised patients, in transplantation, AIDS and malignancy patients undergone in ICU which accounts ~40% ICU mortality. Echinocandin B (ECB), a cyclic hexa-peptide antifungal is mainly used for the treatment of such *Candida* and *Aspergillus* infectious pathogens that refractory to Azoles and Polyenes. It inhibits 1,3- β -glucan synthase by blocking the cell wall synthesis. The biosynthetic gene cluster of Echinocandin B of *Aspergillus nidulans* NRRL 11440 was identified, it contains various structural genes such as NRPS, transporters, acyl-AMP ligase, various oxygenases adjacent to a transcription factor *ecdB*. The regulatory mechanism and function of this *ecdB* transcription factor was not so far known which has been targeted to be explored in present study.

Methodology & Theoretical Orientation: The functional analysis of *ecdB* transcription factor was investigated by gene knockout strategy. The ECB production and transcriptional analysis was observed by HPLC and semi-quantitative PCR respectively.

Findings: The Echinocandin B production in *ecdB* knockout strain (Δ *ecdB*) and WT and no significant difference was found both at production and expression level as compared to WT, while expression of *ecdB* gene is completely lost in Δ *ecdB* strain. Moreover, growth, sporulation, spore germination rates and morphology were also found same with no difference as compared to WT.

Conclusion & Significance: Taken together, *ecdB* present with in the gene cluster has no direct role in regulation the ECB biosynthesis, in addition to that it also not involved in developmental and morphological process of the cell. We suggest that other regulatory network present outside the cluster may have role in ECB biosynthesis.

Biography

Arvind Kumar has completed his MTech in Biotechnology and recently engaged in the research as PhD Fellow in Central University of South Bihar, Patna, (India). He has expertise in elucidation of regulatory network involved in fungal secondary metabolite biosynthetic gene clusters. He also has expertise in the screening, isolation and characterization of bioactive secondary metabolites from fungi as well as plants. Recently, he has started working in the field of molecular characterization and elucidation of regulatory network involved in echinocandin B production. Previously, he has identified a new plant derived insecticide for mosquito control and patented for its commercial use.

arv.mbt@gmail.com

Notes: