INFECTIOUS DISEASES (BACTERIAL, FUNGAL, VIRAL, PARASITIC, INFESTATIONS)

THE ROLE OF BEM46 GENE IN THE GROWTH OF ASPERGILLUS FUMIGATUS

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Background: New medical therapies for life-threatening diseases have resulted in an increase in invasive fungal infections. A.fumigatus remains the most prevalent causal organism. The bud emergence 46 protein is conserved across the eukaryotic kingdom. Our study has demonstrated the role of Bem46 in the growth of A.fumigatus

Objective: Observed the role of Bem46 gene in the morphologiy, germanation and growth of A. fumigatus

Materials and Method: The homologous gene of Bem46 gene in A. fumigatus was found by bioinformatics, and the knockout strain of Bem46 gene was constructed. Then the growth rates of wild strains and △Bem46 strains were observed on GMM medium. We investigated the germination rate between the wild strain and △Bem46.The expression of Bem1gene and Bud5 gene were detected by RT-PCR while the tubulin was a contrast. The morphology of △Bem46 was observed under scanning electron microscope.

Results: The Bem46 gene, Afu7g04660, was found in the genome of A.fumigatus by sequence alignment. It is composed of 1116bp bases and encodes 311 amino acids. △Bem46 were obtained by protoplast method and verified by PCR and Southernblot. The growth was no visible difference between control strain and △Bem46. The germination rate of the △Bem46 was retarded than the control strain by the microscope in the GMM liquid medium. The expression of Bem1 and Bud5of △Bem46 was lower than the control strain. Scanning electron microscopy showed that Bem46 gene affected the formation of spores, reduced the surface spines and spore was not smooth

Conclusion: The Bem46 gene has a positive effect on germination. The deletion of Bem46 leads to low expression of Bud5 and Bem1. These results shown the Bem46 gene could involve in conduction pathway of polarity growth. The gene affects the spore morphology and may affect the pathogenesis of A.fumigatus.