Abstract

Klebsialla pneumoniae is an major opportunistic pathogen which supprative lesions, bacteriemia, and urinary and respiratory traack infections. In Taiwan, K. pneumoniae is closely associated with liver abscess among diabetis mellitus patients and may cause fetal complications. The problem of increasing and spreading antibiotic-resistancy in these enterobacteria further urge for a novel means of antibacterial strategy.

Clinical isolates were collected and obtained from Dr. Feng in Veterans General Hospital, Taipei. Seventeen out of the nineteen strains are identified as K. pneumoniae by lactose utilization and malonate test. To study the virulence factors that associated with the pathogenesis of these clinical isolates, several aims were addressed. Firstly, the fimbrial adhesin and invasin genes of these strains were analyed by PCR and Southern blotting. We have found that most of the isolates contained these adhesin and invasin genes. We also used the cell model which was set up previously to measure adhesin and invasin activity of these strains. The IalK sequence which revealed a high similarity with that of E. coli YdgP and Bartonella baciliformis IalA, respectively is likely sharing a common invasin function during infection process toward meningitis. We have successfully expressed the IalK gene in E. coli, obtained by PCR with the chromosomal DNA of K. pneumoniae CG43 as the template. The protein was present in inclusion body. We use BALB/C mice for protection assay. Unfortunately, the IalK antibody did not protect the mice from K. pneumoniae infection. In addition to the cell model, we have established and performed several assay systems including the yeast agglutination and hemagglutination to analyse the type I and type III adhesin activity among these isolated strains. On the basis of agglutination results, the strains were initially separated into two groups, namely, agglutination and non-agglutination. We are currently investigating the ECM binding activity which including type IV and type V collagens and fibronectin binding activity of these strains.

In the following year, we are going to identify (a) specific target(s) related to the pathogenesis of Klebsiella meningitis using the established assay models. The finding(s) will lead to develop new drugs to interfere eith these targets.

Key Word：Klebsiella pneumoniae menigitis、Cell assay system、Cloning and functional analysis of the pathogenic genes、Target drug development