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In Vitro Study on Virulence Potentials of *Burkholderia pseudomallei* Isolated from Immunocompromised Patients

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Abstract: Eighty four throat swabs were obtained from Basrah General Hospital inpatients (N = 34): 17 were suffering from renal failure and the other 17 were diabetics; and from outpatients (N = 50). Throat swabs were cultured first in the selective media Ashdown's broth then subcultured on Ashdown's agar to isolate *Burkholderia pseudomallei* which was recovered from seven cases (8.33%). Four isolates were from renal failure patients (23.53%), two from diabetic patients (11.76%) and the seventh isolate was from an outpatient with tonsillitis. All isolates were able to produce capsules, form filament chains, exhibit swarming motility and were arabinose non assimilators (Ara-) indicative of their virulence. Additionally, isolated *B. pseudomallei* were found to produce protease, lipase, hemolysin, and lecithinase and were able to produce biofilm, the root of many troublesome persistent infections that resist antibiotic treatment. Susceptibility of the seven isolates of *B. pseudomallei* toward 11 antibiotics was assessed, isolates were found multiply resistant to all antibiotics apart from ciproflaxin. This study confirms for the first time isolation of *B. pseudomallei* from immunocompromised patients in Basrah city of Iraq and describes their virulence potentials.

Key words: *B. pseudomallei*, virulence potentials, biofilm, antibiotic susceptibility, immunocompromised patients.

1. Introduction

B. pseudomallei are Gram- negative bipolar aerobic motile rod-shaped bacteria. It is a soil saprophyte endemic to many areas in Southeast Asia [1, 2] and northern Australia but is sporadically isolated in subtropical and temperate countries [3, 4]. Although it is very rarely seen in patients in the United States, O'Sullivan et al. reported pulmonary *B. pseudomallei* infection in a young girl with cystic fibrosis who had never traveled to Asia or Australia [5].

B. pseudomallei are present in stagnant water, paddy fields and infection is via the skin through abrasions or aspiration or ingestion of contaminated water and inhalation of dust from contaminated soil [6-8]. It is a human and animal pathogen which causes melioidosis [9-11], a little known disease that is endemic, and is easily be mistaken for tuberculosis or a fungal infection [12, 13]. Risk factors for subjective infection with *B. pseudomallei* include: diabetes, renal failure, chronic lung disease, thalassaemia, iron overload, cystic fibrosis, influenza A, carcinoma, radiation therapy, pregnancy and immunosuppressive drugs [14-18]. Besides, it might cause bacteraemic pneumonia in a diabetic patient [19].

Moreover, Estivals et al. reported that septicemia, bilateral community acquired pneumonia and empyema could result due to *B. pseudomallei* with a

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