In vivo and In vitro Study in virulence of Burkholderia Pseudomallei isolated from Clinical and enviromental sources.

A thesis

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Summary

One hundred and seventy-one samples were collected from :1)clinical sources including (84)throat swabs [34 of which were from inpatients in Basrah general hospital including: (17) patients suffering from renal failure and the other (17)patients were with diabetes mellitus]. The remaining (50) clinical samples were from out- patients . 2)environmental sources including [23soils,39water samples,25swabs from hospital environment] .

Samples were cultured on the selective media Ashdown's agar giving up perncentage frequency of Burkholderia pseudomallei (25.14%) from all clinical and environmental sources.

The highest percentage recovered of B. pseudomallei in clinical samples was(23.52%) among renal failure patients followed by(11.76%) among diabetes mellitus patients.

Percentage recoverey of B. pseudomallei from environmental sources was (51.28%) from water , (43.47%) from soil and (24%) from hospital environment.

It should be noted that the higher recoverey rate of B. pseudomallei was from surface water(88.88%) followed by ponds(66.66%) and was not isolated from R.O.

Biotyping of B. pseudomallei was assessed by the ability to assimilate L-arabinose . among clinical and environmental isolates (25.58%) have assimilated arabinose (Ara^+) and the remaining (74.41%) were arabinose non assimilators(Ara^-). All clinical isolates were(Ara^-) while those of water ,soil and hospital environment were either Ara^- or Ara^+.

Isolates of various sources were tested for their ability to produce extacellular enzyme ,all clinical isolates were positive for hemolysin ,protease ,lipase and lecithinase except one isolate did not produce hemolysin or lecithinase.

Isolates of water, soil and hospital environment have produced these extacellular enzyme but in various ratio.

All clinical and environmental isolates were able to produce capsule. Clinical isolates were able to form filament chains(100%) followed by hospital environment isolates(83.33%),while those of water isolates did not form any chain.

Also clinical isolates exhibited swarming motility (100%) followed by hospital environment isolates(83.33%),water and soil isolates(60% and 40% respectively). There was a significant differense ($p < 0.05$)in producing hemolysin ,protease ,lipase and lecithinase between Ara- and Ara^+ isolates, and all soil isolates able to swarm were arabinose non assimilators .

Clinical isolates exhibted high ability to form biofilm in comparison with water and soil isolates. hospital environment isolates were not able to form biofilm.

Culture filtrate of B. pseudomallei has approved activity of the enzyme protease (based on casein digestion)and the activity of necrotoxin, assayed in adult rabbit by intradermal inoculation of 0.1 ml of crude filtrate,has revealed necrotic lesion 24h after injection. .

Crude preparation was seperated and protein concentration was estimated (1.3)mg/ml.

Groups of mice Balb/c were inoculated with five concentrations of the crude preparation(0.08,0.12,0.16,0.2, 0.6)gm/kgm showed that lethal dose (LD50) equal to (0.12) gm/kg.

Resistance of B. pseudomallei to eleven antibiotics was determined ,all clinical ,water, soil and hospital environment isolates(100%)were susceptibile to ciprofloxacin and resistant to gentamycin ,cephalothin(100%) .

Clinical and environment isolates showed distinct six patterns of resistance. Pattren 1 (resistant to all antibiotic and susceptibile only to ciprofloxacin) was most frequent in clinical ,water and soil isolates.