UNIVERSITY OF South Carolina

Pseudomonas aeruginosa

General Information

Pseudomonas aeruginosa is a gram-negative rod-shaped bacterium that is a widespread opportunistic pathogen. *P. aeruginosa* can produce toxins such as exotoxin A and enterotoxins and has a natural resistance to antibiotics.

Host Range

Humans, animals, plants

Incubation Period

Can Vary; 24-72 hrs.

Survival Outside Host

P. aeruginosa can survive for months outside a host due to its ability to form biofilms on living and non-living surfaces. Humid conditions aid its persistence outside a host.

Laboratory Hazards

Parenteral inoculation, aerosol inhalation, skin contact, and ingestion.

Symptoms of Exposure

Wide range of symptoms, depends on the part of the body affected: **blood**: fever, chills, muscle and joint pain; **skin**: redness, pus-filled blisters, itchiness; **eyes**: pain, redness, swelling, blurred vision; **respiratory tract**: pneumonia, severe coughing.

Lab Acquired Infections (LAIs)

None reported

Personal Protective Equipment

Disinfection & Inactivation

10% bleach, 70% ethanol. Is more resistant on surfaces than in liquid suspension. If *P. aeruginosa* forms a biofilm, resistance to disinfectant is similar to that of bacterial spores.

Waste Management

Refer to USC's Biological and Infectious Waste Management Plan.

Lab Containment

Biosafety Level 2 (BSL-2) for activities with materials and cultures known or reasonably expected to contain *P. aeruginosa*.

Animal Containment

Animal Biosafety Level 2 (ABSL-2) for activities with experimentally infected animals.

Medical Surveillance/Treatment

Surveillance: Identified by bacteriological culture
Prophylaxis: Antibiotics
Vaccines: None
Treatment: Antibiotics; *P. aeruginosa* is becoming more resistant to certain antibiotics

Spill Procedures

See USC Biological Spill Procedures

Exposure Procedures

See USC Protocol for Post Exposure Evaluation and Follow-up Use of sharps should be strictly limited. All procedures with the potential for creating aerosols and droplets should be performed in a biosafety cabinet.

References

Biosafety In Microbiological and Biomedical Laboratories (BMBL) 6th Ed., Centers for Disease Control and Prevention, National Institutes of Health

Public Health Agency of Canada (2011) Pathogen Safety Data Sheets: Infectious Substances – Pseudomonas spp. Pathogen Regulation Directorate, Public Health Agency of Canada

Crabbe, A. et al. (2017) Antimicrobial efficacy against *Pseudomonas aeruginosa* biofilm formation in a three-dimensional lung epithelial model and the influence of fetal bovine serum. Scientific Reports 7:43321