Pathogen Safety Data Sheet

Section 1 - Infectious Agent

Agent Name: **Pseudomonas fluorescens**

Agent Type: Bacteria

Taxonomy:

Family: Pseudomonadaceae Genus: Pseudomonas

Species: *P. fluorescens*

Subspecies/Strain/Clonal Isolate:

Synonym/Cross Reference

Characteristics

Brief Description: Pseudomonas fluorescens are Gram-negative rod shaped bacteria that inhabit soil, plants, and water surfaces. It has multiple flagella and is an obligate aerobe.

Properties: P. fluorescens demonstrates hemolytic activity, and as a result, has been known to infect blood transfusions.

Section 2 - Hazard Identification

Pathogenicity/Toxicity

Pseudomonas fluorescens is not generally considered a bacterial pathogen in humans; however, multiple culture-based and culture-independent studies have identified it at low levels in the indigenous microbiota of various body sites. While significantly less virulent than P. aeruginosa, P. fluorescens can cause bacteremia in humans, with most reported cases being attributable either to transfusion of contaminated blood products or to use of contaminated equipment associated with intravenous infusions.

Predisposing Factors: Immunocompromised systems

Communicability

Transfusion of contaminated blood products or to use of contaminated equipment associated with intravenous infusions.

Epidemiology

Worldwide.

Host Range

Natural Host(s): Humans and plants.

Other Host(s): None.

Infectious Dose

Unknown

Incubation Period

Unknown

Section 3 - Dissemination

Reservoir

Are there organisms (often a species of small mammal or bird) in which the infectious agent is maintained without causing any obvious clinical symptoms?

Vectors
Is there an invertebrate (typically arthropod) species that can carry and transmit the pathogen to humans or animals? Typically this refers to an arthropod that transmits by biting or laying eggs, but could refer to a "mechanical vector" (please specify). If the infectious substance is not spread by arthropod vectors enter "none".

Zoonosis / Reverse Zoonosis
Is the disease spread between animals and humans? If so, in which direction, and between which species? If the infectious substance is not zoonotic enter "none".

Section 4 - Dissemination

Drug Susceptibility
Sensitive to colistin, gentamicin, kanamycin and tetracycline.

Drug Resistance
Describe known drug resistance or multi-drug resistance.

Susceptibility to Disinfectants
Susceptibility has been shown for 1% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde, and formaldehyde ; however, it has been found to be resistant to disinfectants that are used to treat drinking water such as chlorine, chloramines, ozone, and iodine . Certain adapted stains have been found to be able to grow in disinfectants; however, isopropyl alcohol 4% v/v or ethyl alcohol 6% v/v are effective disinfectants.

Physical Inactivation
Inactivation and sterilization using moist heat should be at 121°C for 15 minutes or longer, dry heat at 170 - 250 °C or higher for 30 minutes or more.

Survival Outside Host
Pseudomonas can survive for months on dry surfaces and inanimate objects, and are one of the bacteria most frequently isolated from patients with nosocomial infections; humidity can improve persistence. Growth observed in distilled water can survive up to months with minimal nutrients.

Section 5 - First Aid and Medical

Surveillance
Diagnosis is made by bacteriological culture on selective/nonselective culture media and laboratory identification.

First Aid / Treatment
Administer appropriate drug therapy. Aminoglycoside with β-lactam penicillin is usually the first line of treatment. Aggressive treatment can avoid development of chronic infection. Wounds should be cleaned with surgical detergent disinfectants and/or topical antibacterial ointments, such as mupirocin.

Immunization
None

Prophylaxis
Antibiotics such as ciprofloxacin (a fluoroquinolone) can be used in patients with CF, but constant prophylactic therapy is not recommended as it can lead to drug resistance.

Section 6 - Laboratory Hazards

Laboratory Acquired Infections
None reported.

Sources / Specimens
Blood cultures, urine, skin, sputum, soft tissue samples, lower respiratory tract secretions, wound exudates, contaminated water samples, and mechanical ventilator equipment

Primary Hazards
Accidental parenteral inoculation, inhalation of infectious aerosols, accidental ingestion, or direct skin contact

Special Hazards
None

Section 7 - Exposure Controls and Personal Protection

Risk Group Classification
What is the Risk Group classification in humans and animals for the pathogen?

Human Risk Group Classification RG1 Animal Risk Group Classification RG1

Containment Requirements

Containment Level: CL1

Containment Zone Requirements:
Containment Level 1 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials, animals, or cultures.

Protective Clothing
Lab coat. Gloves when direct skin contact with infected materials or animals is unavoidable. Eye protection must be used where there is a known or potential risk of exposure to splashes.
If there are no special hazards for this agent enter “none”.

Other Precautions
All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC). The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving animals or large scale activities.

Section 8 - Handling and Storage

Spills
Allow aerosols to settle. Wearing protective clothing, gently cover the spill with absorbent paper towel and apply suitable disinfectant, starting at the perimeter and working towards the centre. Allow sufficient contact time before clean up.

Disposal
Decontaminate all wastes that contain or have come in contact with the infectious organism by autoclave, chemical disinfection, gamma irradiation, or incineration before disposing.

Storage
The infectious agent should be stored in appropriately labelled leak-proof containers in a locked area. Containers of infectious material or toxins stored outside the containment zone must be labelled, leakproof, impact resistant, and kept either in locked storage equipment or within an area with limited access.

Section 9 - Regulatory Information

The import, transport, and use of pathogens in Canada is regulated under many regulatory bodies, including the Public Health Agency of Canada, Health Canada, Canadian Food Inspection Agency, Environment Canada, and Transport Canada. Users are responsible for ensuring they are compliant with all relevant acts, regulations, guidelines, and standards.

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References

Risk Group determination from "PHAC Biological Agent Search".

Von Graevenitz A, Weinstein J. Pathogenic significance of Pseudomonas fluorescens and Pseudomonas putida. The Yale Journal of Biology and Medicine. 1971;44(3):265-273.

Gershman MD, Kennedy DJ, Noble-Wang J, et al. (2008). "Multistate outbreak of Pseudomonas fluorescens bloodstream infection after exposure to contaminated heparinized saline flush prepared by a compounding pharmacy". Clin Infect Dis. 47 (11): 1372–1379.

Gibb AP, Martin KM, Davidson GA, Walker B, Murphy WG (1995). "Rate of growth of Pseudomonas fluorescens in donated blood". Journal of Clinical Pathology. 48 (8): 717–8.