

BIOHAZARDOUS AGENT REFERENCE DOCUMENT*Listeria monocytogenes*

The Biohazardous Agent Reference Document (BARD) is a general guidance resource that reviews and summarizes the nature of a pathogen or biotoxin, and offers safety requirements for work with the agent in the laboratory. The BARD may replace the formal SOPs used in conjunction with some IBC registrations.

The BARD is provided as an additional guidance tool, and is not a substitute for a risk assessment, biosafety training, lab-specific training, or a formal [IBC master protocol registration](#). This document should be readily available in the laboratory, and it is the responsibility of the Laboratory Supervisor or Principal Investigator to ensure that all personnel have read, understood, and signed the document. The BARD is for informational purposes only, and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Please consult a health care provider for any medical questions or concerns.

INSTRUCTIONS

- 1. Review the information contained in this document.**
- 2. Add any necessary information that is specific to your work in the laboratory (such as strain-specific information). Please be sure that the track changes function is turned on to indicate any changes that you make.**
- 3. Instruct all personnel to review the BARD and sign the last page, indicating that they have read and understood the information.**
- 4. Submit the BARD along with your IBC master protocol registration, amendment, or continuing review.**

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Listeria monocytogenes

CHARACTERISTICS

Morphology	Gram-positive, non-spore forming, rod-shaped coccobacillus that has the ability to grow at a wide range of temperatures and pH values
Strain Specific Characteristics	Most human and animal cases caused by serovars 4b, 1/2b, and 1/2a

HEALTH HAZARDS

Host Range	Humans, other mammals, fish, crustaceans, insects
Modes of Transmission	Ingestion, transplacental, mucous membrane contact, contact with non-intact skin
Signs and Symptoms	Fever is most common, but several manifestations may also include: chills, malaise, back pain, joint pain, stiffness of neck, tremors, seizures, diarrhea, vomiting, swelling of salivary glands and lymph nodes, papules or pustules on hands and arms, muscle pain, headache
Infectious Dose	10 – 100 CFU (colony forming units) in healthy host
Incubation Period	Highly variable. Febrile gastroenteritis may appear within 18 – 20 hours, other manifestations may appear within 1 – 4 weeks.

MEDICAL PRECAUTIONS / TREATMENT

Prophylaxis	None available
Vaccines	None available
Treatment	Ampicillin or amoxicillin together with the addition of gentamicin for immunocompromised individuals
Surveillance	Monitor for symptoms and test by laboratory cultivation
UVM IBC Requirements	Report any exposures or signs and symptoms to your supervisor.
Additional Medical Precautions	Women who are pregnant or planning on becoming pregnant should be aware that listeriosis during pregnancy can lead to loss of pregnancy, or severe illness or death of neonates. Immunocompromised individuals are also at an increased risk.

LABORATORY HAZARDS

Laboratory Acquired Infections	Some suspected cases, none of which have been confirmed
Sources	Blood, cerebrospinal fluid, feces, skin lesions, infected organs, tissues, and body fluids from human or animal specimens, contaminated foods, or laboratory cultures

CONTAINMENT REQUIREMENTS

BSL - 2	Manipulation of known or potentially infected clinical samples and cultures of laboratory adapted strains (RG2)
BSL - 3	
ABSL - 2	Work with animals infected with risk group 2 strains
ABSL - 3	
Aerosol generating activities	Centrifugation, homogenizing, vortexing or stirring, changing of animal cages, cell sorting, pipetting, pouring liquids, sonicating, loading syringes
Primary containment device (BSC)	Use for aerosol-generating activities, large volumes, or high concentrations

EXPOSURE PROCEDURES

Mucous membranes	Flush eyes, mouth or nose for 15 minutes at eyewash station.
Other exposures	Wash area with soap and water for 15 minutes
Medical Follow-Up	Contact UVMHC Infectious Disease Dept. directly at (802) 847-2700 for immediate assistance
Reporting	Report all exposures or near misses to: <ol style="list-style-type: none"> 1. Your immediate Supervisor 2. The UVM Biosafety Officer at (802) 777-9471 and Risk Management at 6-3242 3. Risk Management and Safety; https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Minimum PPE Requirements	Nitrile gloves, lab coat, appropriate eye/face protection. Wash hands after removing gloves.
Additional Precautions (Risk assessment dependent)	Sharps use strictly limited.

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VIABILITY	
Disinfection	At room temperature: susceptible to 10% bleach, iodophor compounds, 70% alcohols; with 15-minute contact time. Five to ten-fold higher concentrations of disinfectants are required at 4°C.
Inactivation	Inactivated by temperatures above 70°C, pressure above 500 MPa
Survival Outside Host	Commonly found in soil, can tolerate cold temperatures, low pH, and is relatively heat resistant.

SPILL CLEAN UP PROCEDURES	
Small Spill	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply approved disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before clean up and disposal. Dispose in double biowaste bags and biobox.
Large Spill	Inside of a lab: Call UVM Service Operations at 656-2560 and press option 1 to speak to a dispatcher. Ask them to page Risk Management and Safety. Outside of a lab: Pull the nearest fire alarm and evacuate the building. Wait out front of the building for emergency responders to arrive.

REFERENCES	
Canadian PSDS	https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/listeria-monocytogenes.html
BMBL	https://www.cdc.gov/biosafety/publications/bmb15/
CDC Guidelines	https://www.cdc.gov/listeria/technical.html

STUDENT / EMPLOYEE NAME	SIGNATURE	DATE

Biosafety Review:

Jeff LaBossiere, Biological Safety Officer

Date

Principal Investigator: _____

IBC Registration #: _____