

Lymphocytic Choriomeningitis Virus

CHARACTERISTICS

Synonym or Cross Reference	LCMV, LCM, Benign (or serous) lymphocytic meningitis, and Armstrong’s disease
Disease	LMCV is benign (or serous) lymphocytic meningitis, and Armstrong’s disease
Morphology	Enveloped, round, oval, or pleomorphic virion approx. 110 nm - 130 nm diam. - bipartite single-stranded RNA genome. Interior granules resemble sand grains characteristic of family Arenaviridae. Surface has hollow golf-club shaped projections.
Zoonosis	Yes, LCMV is spread mainly through contact with contaminated rodent secretions/excretions

RISK GROUP & CONTAINMENT REQUIREMENTS

ABSL-2/ABSL-3	ABSL-3 facilities, equipment, and operational practices. May not apply to all strains and clonal isolates. BSL-2 for Clone 13: Use extreme caution.
BSL-2+/BSL-3	ABSL-3 facilities, equipment, and operational practices. May not apply to all strains and clonal isolates. BSL-2 for Clone 13: Use extreme caution.
Risk Group 3	Agents associated with serious or lethal human disease; preventive or therapeutic interventions may be available. May not apply to all strains and clonal isolates. Clone 13 is a Risk Group 3 pathogen.

LABORATORY HAZARDS

Primary Hazards	Aerosols, and direct contact of mucous membranes with virus.
Sources	Samples described in IBC protocol.
Lab Acquired Infections (LAIs)	LCMV infection is a well-known occupational risk for rodent handlers. In the past 50 years, over 84 cases were reported, including cases from an outbreak associated with nude mice.

PERSONAL PROTECTIVE EQUIPMENT

Additional Precautions	Additional PPE may be required depending on lab-specific SOPs and IBC Protocol.
Minimum PPE Requirements	Lab coat, disposable gloves, safety glasses, closed toed shoes, long pants.

SPILL PROCEDURES

Large	Immediately notify all lab personnel and clear the area. Remove any contaminated PPE/clothing before exiting the lab. Lock all entry doors, post warning signage, and deny entry. Call DPS (213-740-4321) and ask to notify EH&S. Inform the PI and/or Lab Manager/Supervisor as soon as possible.
Small	Notify all lab personnel lab. Remove contaminated PPE and don new PPE. Cover spill area with absorbent material and add fresh 1:10 bleach:water. Allow 20 minutes (or as directed) contact time. After 20 minutes, clean up and dispose of materials.

VIABILITY

Disinfection	Use 10 % dilution of household bleach (minimum 0.3% sodium hypochlorite) for 20 to 30 minutes, or an acceptable time approved by IBC and EH&S.
Survival Outside Host	LCMV is quickly inactivated outside its host. Will retain its infectivity for at least 206 days if stored in 50% glycerine/0.85% saline at 4-10°C.

HEALTH HAZARDS

Host Range	Humans, mice, hamsters, guinea pigs, rats, monkeys, dogs, rabbits, and chickens
Incubation Period	Approximately 8 to 13 days and 15 to 21 days before any meningeal symptoms appear.
Infectious Dose	Unknown
Modes of Transmission	Infected mice shed LCMV in their feces, urine, saliva, breast milk, and semen. Transmitted to humans and other rodents by direct contact, through damaged skin or mucous membranes, inhalation of aerosolized virus, ingestion of virus-contaminated food or dust, through rodent bites, or by contact with infected fomites. Transmission possible through organ transplantation from LCMV-infected donors and from an infected mother to fetus.
Signs and Symptoms	1/3 of infected adults may be asymptomatic or limited to a non-specific, self-limited viral syndrome with symptoms such as fever, cough, malaise, myalgia, headache, photophobia, nausea, vomiting, adenopathy, and sore throat.

EXPOSURE PROCEDURES

Medical Follow-up	Visit USC’s designated healthcare provider. Bring a copy of this PSDS.
Mucous Membrane	Flush eyes for 5-10 minutes at eyewash station.
Other Exposures	Immediately wash affected area with soap and water for 15 minutes.
Reporting	Immediately report incident to supervisor, notify EH&S, and complete Manager’s Report.

MEDICAL PRECAUTIONS/TREATMENT

Prophylaxis	None
Surveillance	Monitor for symptoms of infection.
Treatment	Ribavirin is effective in vitro, and may be effective for treatment of LCM
USC Requirements	Immediately report any exposures to Environmental Health & Safety.
Vaccines	None available

REFERENCES

BMBL http://tiny.cc/cdc-bmb1	Canadian PSDS http://tiny.cc/canada-gov-psds
CDC https://www.cdc.gov/	NIH Guidelines http://tiny.cc/nih-bio-secure

