HERPES B Virus

Macacine herpesvirus 1

Last update – Dec 2024

CHARACTERISTICS

Morphology	Belongs to the subfamily *Alphaherpesvirinae*, genus Simplex virus, and is closely related to herpes simplex virus-1 and -2; 160 to 180 nm in diameter, enveloped, double-stranded DNA virus.

HEALTH HAZARDS

Host Range	Humans are highly susceptible to Herpes B infection. Macaques species are natural hosts and are usually asymptomatic, but may experience mucosal lesions, if immunosuppressed.
Modes of Transmission	All macaques should be presumed to have and to shed Herpes B virus. Humans are infected by macaque bites/scratch, splash of the eye or mucous membranes with bodily fluids, needle stick from contaminated syringe, or scratch/cut with fomites. Person-to-person transmission from intimate contact with vesicular lesions has been documented in a single case.
Clinical Manifestations	Rare but very serious infection that starts with Flu-like symptoms (fever, myalgia, headache) and localized vesicular lesion with itching and pain near the site of inoculation. Neurological deterioration signs follow 3 to 7 days later, including seizures, confusion, diplopia (double vision), dysphagia (difficulty in swallowing) , dizziness, dysarthria (unclear articulation of speech), ataxia (loss of muscle control), respiratory failure, and coma. **Fatality is very high** when virus spreads to the central nervous system regardless of antiviral therapy and supportive care.
Infectious Dose	Unknown.
Incubation Period	Ranges 2 days to 5 weeks (most cases ranges from 5 to 21 days).

LABORATORY HAZARDS

Laboratory Acquired Infections (LAIs)	Virtually all known Herpes B virus infections in humans have been acquired via laboratory exposure to macaques, macaque contaminated fomites or macaque fluids or tissue. The majority were contracted from the bite of an infected monkey.
Sources	All tissues and fluids from infected macaques (blood, saliva, conjunctival fluid, urogenital secretions, cerebrospinal fluid), central nervous system tissues and contaminated fomites are potential source of infection.
Primary Laboratory Hazards	Parenteral inoculation (e.g. needle stick); direct contact of mucous membranes or broken skin with infected specimens. Aerosols may present hazards as well.

CONTAINMENT REQUIREMENTS

BSL 2	BSL-2 practices, containment equipment, and facilities are recommended for activities using Non-Human Primates materials.
ABSL 2	For all procedures utilizing infected animals and bedding.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Minimum PPE Requirements	Gloves, lab coat, close toe shoes and facial mucosa protection for activities outside of a biosafety cabinet – BSC.

Exposure is dangerous and may be life-threatening!

This awareness document does not provide individualized medical care or treatment.

ENGINEERING CONTROLS

Additional Precautions	All procedures manipulating macaque materials should be conducted in a BSC. The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving animal activities.

VIRAL STABILITY

Disinfection and Contact Time	Susceptible to 10% bleach for 2-5 min, povidone-iodine, and chlorhexidine.
Inactivation	Inactivated by heat 56°C for at least 30 minutes.

SPILL PROCEDURES

Minor (droplets on work surface)	Cover spill with and gently pour or spray disinfectant over the towels. Allow proper contact time (see above).
Major	Notify others working in the lab and exit the lab. Allow aerosols to settle for 30 minutes. Don appropriate PPE. Cover area of the spill with paper towels or other absorbent and gently pour an EPA approved disinfectant over the towels, working from the perimeter towards the center. Allow 30 minutes of contact time before cleanup. Dispose of cleanup materials in biohazard waste.

IMMEDIATE response and medical attention are critical!!!

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.
Reporting	Immediately report to supervisor and contact the Biosafety Office (513-558-6182).
Medical Assistance	**Employees:** UC Health INJURY HOTLINE (24 hours) **513-585-8000** **Students:** University Health Services (UHS) **513-556-2564**

PROPHYLAXIS

Post-Exposure	Antiviral prophylaxis is started as soon as possible after an exposure (within hours), but only after wound cleaning has been completed (see above). Three orally administered agents are currently available for post-exposure prophylaxis : acyclovir, valacyclovir, and famciclovir. The drug of choice is valacyclovir.

REFERENCES

CDC	https://www.cdc.gov/herpesbvirus/index.html
MSDS Canada	https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/cercopithecinae-herpes-virus-1.html

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