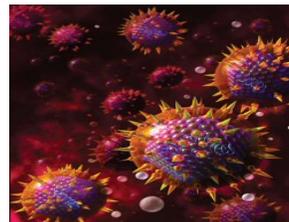


BioMaterial Fact Sheet: Hepatitis C Virus (HCV)

Hepatitis C Virus (HCV) can cause inflammation of the liver. HCV is in a separate genus, Hepacivirus, which is in the Flaviviridae family. HCV has major Genotypes 1-11, subtypes (a,b,c,etc.) and 100 different strains. It is possible for someone to become acutely infected with HCV and clear the virus from their bodies without treatment. However, it is more common that the HCV infection may become chronic and lead to cirrhosis, chronic liver disease or liver cancer. There is no HCV vaccine. HCV is an enveloped, single stranded, positive sense RNA virus. Transmission occurs by percutaneous exposure to plasma derivatives and contaminated blood. HCV is inactivated by exposure to solvents or detergents, heating at 60 degrees C for 10 hours or 100 degrees C for 10 minutes in an aqueous solution, formaldehyde (1:2,000) at 37 degrees C for 72 hours, Beta-propiolactone and UV radiation. HCV is relatively unstable stored at room temperature or repeated states of thawing and freezing.



Containment Level: Hepatitis C Virus is manipulated following Biosafety Level 2 (BSL2) criteria, with enhanced BSL3 practices (BSL2* is designation given). ABSL determined by risk assessment - must be approved by IBC.

Required Training: To work with HCV, laboratory staff must have complete the Bloodborne Pathogen (BBP) training offered by EHS and Lab/Protocol specific SOP's. In addition, staff should receive 'hands-on' training from their laboratory supervisor or animal facility manager prior to manipulating the agent. Training should cover the hazards associated with the work, required practices and procedures and, if manipulating infected animals, proper handling of animal bedding, caging, and all other husbandry materials associated with the experiment.

Personal Protective Equipment (PPE): Laboratory coat with cuffed sleeves or tyvek sleeves, double gloves, goggles and surgical mask OR face shield must be worn. A respirator is not required. **If working with concentrated titers contact the Biosafety Officer at 301-846-5038.**

Engineering Controls: HCV is manipulated in the BSC at all times. Use of other containment devices (i.e. containment centrifuge) must be used. Only one virus is manipulated at any given time within the BSC. Prior to manipulation of a different agent, the BSC and all equipment will be decontaminated with Cavicide or 10% bleach prepared daily. Centrifugation must be done in closed containers and accompanied by an intact aerosol ring using sealed rotor buckets with safety caps and samples in screw-cap tubes. Centrifuge containers must only be loaded and unloaded within a BSC, not on the open bench.

Additional Safety Practices (Laboratory):

- All vacuum lines must be fitted with a hydrophobic HEPA filter
- Flask with disinfectant readily available
- Aerosol-resistant tips must be used when pipetting
- No sharps used in combination with HCV (Refer to Safetygram ISM144)

Disinfection: Disinfect all work surfaces and materials both prior to and immediately following all work practices and procedures.

- Surfaces: Cavicide, Dispatch or 10% (1:10) bleach solution (made daily) with a minimum of 10 minutes of contact time. Rinsing of surfaces with water is recommended after use of any chlorine-based disinfectant on metal surfaces to mitigate corrosion
- Liquid Waste: Bring liquid waste to a final concentration of 10% bleach. If aspirating into a 1L flask, the flask should first be filled with 100 mL bleach and diluted down to 10% (1:10) with liquid waste. Contact time should be a minimum of 30 minutes prior to drain disposal (while tap water is running).
- Solid Waste: All solid wastes should be treated as hazardous waste according to FNLCR-Frederick handling procedures (<http://home.ncifcrf.gov/ehs/ehs.asp?id=69>).

Employee Exposure*:

- Eye exposure from splash or aerosols: Flush eyes for a *minimum* of 15 minutes in eyewash and then report to OHS immediately afterwards. Follow the NCI-Frederick Exposure Control Plan (<http://home.ncifcrf.gov/ehs/ehs.as?id=12>) for reporting occupational exposures to potentially infectious material. Dial 911 after-hours to report exposure and obtain assistance.
- Needlesticks and/or non-intact skin exposure: Wash contaminated skin for 15 minutes using a 10% povidone iodine solution (such as Betadine), a chlorhexadine scrub kit, or soap and copious amounts of water. Report to OHS immediately after scrub. If the exposure occurs after normal business hours contact the 911 emergency number. Follow NCI-Frederick Exposure Control Plan.

* For all employees listed on an Institutional Biosafety Committee (IBC) research registration form, Occupational Health Services provides a confidential, voluntary HCV serology screening program.

References:

Photo: <http://www.livershield.net/id19.html>
<http://www.cdc.gov/hepatitis/HCV/GCVfaq.htm>
<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001329/?report=printable>
<http://www.who.int/csr/disease/hepatitis/whocdscrlyo2003/en/index4.html>