

Tel-Aviv University –Safety Unit

Standard Operating Procedure for Working with Coxsackievirus

1. Health hazards	<p>Coxsackievirus is a virus that belongs to the enterovirus family, an icosahedral, non-enveloped, linear, positive-sense single-stranded RNA viruses.</p> <p>Coxsackieviruses are divided into group A and group B viruses based on early observations of their pathogenicity in neonatal mice. Group A coxsackieviruses were noted to cause a flaccid paralysis (which was caused by generalized myositis) while group B coxsackieviruses were noted to cause a spastic paralysis (due to focal muscle injury and degeneration of neuronal tissue). At least 23 serotypes of group A and six serotypes of group B are recognized.</p> <p>Host Range: Human, monkey, mouse.</p> <p>Zoonosis: non</p> <p>Mode of Transmission: Infection occurs through contact with infective secretions or excretions, and subsequent autoinoculation of mouth, nose, or eyes. Ingestion of contaminated water may contribute to infection.</p> <p>*Intranasal and aerosol transmission are possible for some variants through contaminated respiratory secretions.</p> <p>Once inside the body, Coxsackieviruses replicate in lymphoid tissues and then disseminate in blood.</p>
2. Biosafety consideration	<p>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.</p>
3. Training	<p>Work with Coxsackievirus should be carried out by trained personnel and a competent scientist must direct all personnel.</p>
4. Personal Protective Equipment (PPE)	<p>Gloves (consider double gloving), eyes safety goggles and lab coat.</p> <p>N-99 respirator mask covering the mouth and nose when not working in a Class II Biosafety Cabinet (BSC).</p> <p>Appropriate PPE should also be used for lower arms such as sleeve covers or securing gloves over the sleeves of laboratory coat.</p> <p>Tools (as, syringe, blades and safety needles where possible) should be adapted for BSL-2. Have a sharps container in close vicinity.</p>
5. General Precautions	<p>Survival Outside Host: Can survive for months under favorable conditions of neutral pH, moisture, and low temperature; enhanced by presence of organic matter.</p>

6. Environmental / Ventilation Controls	Work should be conducted in BSL-2 facility, in a class II type A1 or A2 biological cabinet.
7. Exposure risks	<p>Transmission of Coxsackievirus can occur through inhalation of aerosolized droplets, mucous membrane contact, ingestion and accidental injection.</p> <p>When handling Coxsackievirus-containing cultures outside of containment equipment, a respirator (N99 mask) should be worn.</p> <p>Combination of goggles and respirator provided adequate protection (mucosal and respiratory).</p>
8. Decontamination	<p>Susceptibility to Disinfectants: Sensitive to formaldehyde, glutaraldehyde, strong acids, sodium hypochlorite (bleach), and free residual chlorine. Sensitivity is dependent on sufficient concentration, pH, and contact time and is reduced in presence of extraneous organic materials.</p> <p>Insensitive to lipid solvents, including ether and chloroform.</p> <p>Infectious viruses are usually resistant to many common laboratory disinfectants, including 70% ethanol, isopropanol; dilute Lysol, and quaternary ammonium compounds.</p> <p>Stable in many detergents at ambient temperatures.</p> <p>Physical Inactivation: Sensitive to UV mediated inactivation. Drying conditions reduce viral titers, the degree of which is dependent on the porosity of the surface and presence of extraneous organic matter.</p> <p>Most are readily inactivated at 42 °C, but stability and heat resistance is increased in the presence of sulfhydryl reducing agents and magnesium cations.</p>
9. Spill and Accident Procedures	<ol style="list-style-type: none"> 1. Evacuate area, remove contaminated PPE and allow agents to settle for a minimum of 30 minutes. Initiate spill response procedure. 2. Cover the spill with absorbent material. Starting at the edges and work towards the center. 3. Carefully pour disinfectant over the absorbed spill, again starting at the edges. Saturate the area with disinfectant. 4. Allow sufficient contact period to inactivate the material in the spill. Non-viscous spills require 15-20 minutes: viscous spills require 30 minutes. 5. Use paper towels to wipe up the spill, working from the edge to center. Use tongs or forceps to pick up broken plastics, glass or other sharps that could puncture gloves 6. Discard absorbent material in Chemical waste bags. 7. Clean the spill area with fresh paper towels soaked in disinfectant. Thoroughly wet the spill area, allow disinfecting for 15-20 minutes longer, and wiping with towels. 8. Discard all cleanup materials (soaked with disinfectant) in Chemical bag/ container, and any contaminated PPE (pay special attention to gloves and shoe covers) in a biohazard bag. Close and secure the bags. 9. Place bag in a second biohazard bag, secure and disinfect by autoclaving.

	<p><u>Exposure:</u></p> <ol style="list-style-type: none"> 1. In case of skin contact or injection with Coxsackievirus, wash the affected area with soap and water for at least 15 minutes. Consult with Employee Health Center. 2. For eye exposure, flush with water for at least 15 minutes. Consult with employee Health Center. Report incident to supervisor. Supervisor reports the accident/injury to the Biosafety Unit.
10. Waste Disposal	Decontaminate all wastes that contain or have been exposed to the infectious organism by autoclave or chemical disinfection before disposing. Autoclave: (1 hour at 121°C/250 °F, 15psi of steam pressure).
I hereby confirm that I have read the SOP (Standard Operating Procedure) for Working with Coxsackievirus, and agree to follow these procedures.	
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Name:	Title:
Signature:	Date:

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