

Tel-Aviv University –Safety Unit

Standard Operating Procedure for Working with Respiratory syncytial virus (RSV)

<p>1. Health hazards</p>	<p>Human respiratory syncytial virus (HRSV) belongs to Paramyxoviridae family. A syncytial virus causes respiratory tract infections. RSV is an enveloped RNA virus with a non-segmented single-stranded negative-sense genome. The disease caused by RSV is called respiratory syncytial virus pneumonia, referred to as syncytial virus pneumonia. Syncytial virus pneumonia is a common interstitial pneumonia in children, often occurred in infants and young children. It is a major cause of lower respiratory tract infections.</p> <p>RSV primarily infects human epithelial cells within the nasopharynx; however, it can also infect other types of cells, including cell lines, but with much lower efficacy. Infection may lead to the formation of syncytia within the infected cell.</p> <p>Host Range: Humans; however, various animal species can be experimentally infected with RSV including cotton rats, mice, ferrets, guinea pigs, hamsters, marmosets, lambs, and nonhuman primates.</p> <p>Zoonosis: non</p> <p>Mode of Transmission: RSV is most likely transmitted through direct contact with infectious secretions (via fomites) and/or large-particle aerosols. Transmission via small-particle aerosols is less likely.</p> <p>Transmission may occur through close contact with infected individuals, or significant exposure of nasal or conjunctival mucosa with contaminated hands.</p>
<p>2. Biosafety consideration</p>	<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>
<p>3. Training</p>	<p>Work with Respiratory syncytial virus (RSV) should be carried out by trained personnel and a competent scientist must direct all personnel.</p>
<p>4. Personal Protective Equipment (PPE)</p>	<p>Gloves (consider double gloving), eyes safety goggles and lab coat. 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: RSV is generally very vulnerable to environmental changes, particularly temperature and humidity. It is sensitive to high and low temperature, and to drying; i.e., low humidity levels. RSV loses up to 90% infectivity at room temperature after 48 hours and up to 99% at 1 °C after 7 days. The optimal pH is 7.5. It may survive for about 3 to 30 hours on nonporous surfaces at room temperature.</p>
6. Environmental / Ventilation Controls	<p>Work should be conducted in BSL-2 facility, in a class II type A1 or A2 biological cabinet.</p>
7. Exposure risks	<p>Transmission of Respiratory syncytial virus (RSV) can occur through inhalation of aerosolized droplets, mucous membrane contact, ingestion and accidental injection. When handling Respiratory syncytial virus (RSV)-containing cultures outside of containment equipment, a respirator (N99 mask) should be worn. Combination of goggles and respirator provided adequate protection (mucosal and respiratory).</p>
8. Decontamination	<p>Susceptibility to Disinfectants: RSV has been shown to be susceptible to a variety of detergents, including 0.1% sodium deoxycholate, sodium dodecyl sulphate, and Triton X-100. It may also be sensitive to hypochlorite (1% sodium hypochlorite), formaldehyde (18.5 g/L; 5% formalin in water), 2% glutaraldehyde, and iodophores (1% iodine).</p> <p>Physical Inactivation: RSV is sensitive to heating above 55 °C for 5 minutes (up to 90% decrease in infectivity), freezing and thawing (~90% loss in infectivity following each freeze-thaw cycle), and to acidic media (pH<7).</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>Exposure:</p> <ol style="list-style-type: none"> 1. In case of skin contact or injection with Respiratory syncytial virus (RSV), 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	Autoclave all waste (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 Respiratory syncytial virus (RSV), and agree to follow these procedures.	
Name: _____ Title: _____	
Signature: _____ Date: _____	

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