Tel-Aviv University –Safety Unit

Standard Operating Procedure for Working with Rhinovirus

1. Health hazards	Rhinovirus, part of the Picornaviridae family, are small, icosahedral, non-enveloped viruses around 27 nm in diameter, and contain one positive-strand RNA. The large rhinovirus genus contains over 100 different antigenic types. They are divided into RhV A and RhV B groups, with RhV A2 and RhV C subclasses, based on their sequence similarity and cell entry receptors. Rhinoviruses are common-cold viruses. Replication of the virus is optimized at 33° - 35 °C, thus it is commonly found in the upper respiratory tract, where it can cause persistent bronchospastic cough, and can also lead to secondary bacterial infections such as sinusitis and otitis media. Although infrequent, it is also the second most recognized means of lower respiratory tract infections such as pneumonia and bronchiolitis in young children and immuno-compromised adults, and can cause bronchitis and bronchopneumonia. **Host Range:** Humans. **Zoonosis**: non **Mode of Transmission**: Airborne transmission of aerosols and droplets is the major route of dissemination of the virus, which can enter the body through the respiratory tract by the nose and mouth. Transmission through direct and indirect contact also occurs and is most common via the hand-nose-hand route, followed by self-inoculation of nasal/conjunctival mucosa present on one's hands.
2. **Biosafety consideration**	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.
3.Training	Trained personnel should carry out work with Rhinovirus (RHV) and a competent scientist must direct all personnel.
4. Personal Protective Equipment (PPE)	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). Appropriate PPE should also be used for lower arms such as sleeve covers or securing gloves over the sleeves of laboratory coat. Tools (as, syringe, blades and safety needles where possible) should be adapted for BSL-2. Have a sharps container in close vicinity.

5. General Precautions	**Survival Outside Host**: Virus can survive on Formica, stainless steel, varnished wood, nylon, acetate, Dacron, wool, and silk for up to 3 hours; on cotton, rayon, facial tissue, and paper towel for up to 1 hour; and in nasal mucous up to 24 hours. Drying has little effect on viability.
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	Transmission of Rhinovirus (RHV) can occur through inhalation of aerosolized droplets, mucous membrane contact and contact via contaminated hands.
8.Decontamination	**Susceptibility to Disinfectants**: Domestic bleach (800 ppm free chlorine diluted from 6% sodium hypochlorite) after 10 minutes, 7.05% quaternary ammonium diluted in water, 14.7% phenol diluted in water, 2% glutaraldehyde, and 1% iodine has virucidal activity for up to 1 hour on hands. **Physical Inactivation**: Inactivate by heating in a 56°C water bath for 16 minutes, and at pH 6 or at pH 3 for rapid and complete inactivation.
9. Spill and Accident Procedures	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 requite 15-20 minutes: viscous spills requite 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. <u>Exposure</u>: 1. In case of skin contact or injection with Rhinovirus (RHV), 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 121ºC/250°F, 15psi of steam pressure).

I hereby confirm that I have read the SOP (Standard Operating Procedure) for Working with Rhinovirus (RHV), and agree to follow these procedures.

Name:	Title:
Signature:	Date:

Dr. Esther Michael - Biological Safety Office, 640-9966