MATERIAL SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Human rotavirus

SYNONYM OR CROSS REFERENCE: HRV, Sporadic viral gastroenteritis; severe viral gastroenteritis of infants and children; non-bacterial gastroenteritis of infancy, rotaviral enteritis

CHARACTERISTICS: Reoviridae; double capsid shell, naked, icosahedral virion; 60-80 nm in diameter; double stranded RNA, linear, segmented genome; wheel-like appearance; seven major serogroups (A-G), human strains belong predominantly to strain A; large epidemics have been reported in China with serogroup B

SECTION II - HEALTH HAZARD

PATHOGENICITY: Infects the mature villous epithelium of the small intestine; characterized by fever and vomiting, followed by a watery diarrhea; occasionally associated with severe dehydration and death in children; neurologic abnormalities ranging from aseptic meningitis to subdural haemorrhage related to electrolyte loss; infections in adults are subclinical; local and systemic immune responses are evoked; repeated infections tend to be less severe than the original infection

EPIDEMIOLOGY: Worldwide; the single most important cause of gastroenteritis in children (95% of children worldwide are infected); peak of infection occurs between 4 months and 3 years of age; adults are mostly asymptomatic; in temperate regions, infections are most frequent during the winter and early spring months; high incidence in day-care settings; major cause of nosocomial diarrhea of newborns and infants

HOST RANGE: Humans; experimentally infected animals

INFECTION DOSE: Not known

MODE OF TRANSMISSION: Fecal-oral route; person-to-person; contact with respiratory secretions, contaminated water, food or other surfaces; contact with fomites

INCUBATION PERIOD: Usually 24 to 72 hours

COMMUNICABILITY: Shed in feces during acute stages of the disease and up to 8 days after symptoms subside

SECTION III - DISSEMINATION

RESERVOIR: Humans; animal strains of rotavirus differ from those that infect humans

ZOONOSIS: None
VECTORS: None

SECTION IV - VIABILITY

DRUG SUSCEPTIBILITY: No specific antivirals

SUSCEPTIBILITY TO DISINFECTANTS: Susceptible to 95% ethanol, 2% formalin, 5% lysol, 2% sodium hypochlorite but requires prolonged exposure

PHYSICAL INACTIVATION: Stable at acidic pH (3.0 - 3.5); sensitive to heating above 50° C; stabilized by the addition of 2M magnesium sulfate

SURVIVAL OUTSIDE HOST: Survives for months at 4° C and 20° C

SECTION V - MEDICAL

SURVEILLANCE: Monitor for symptoms and for demonstration of rotavirus antigen in stools by EIA

FIRST AID/TREATMENT: Supportive therapy to prevent dehydration, acidosis and shock, single oral dose of gamma globulin reduces duration of illness and virus shedding

IMMUNIZATION: FDA approved live virus vaccine, tetravalent rhesus-based (Rotashield); not recommended for infants due to correlation of vaccine use and intussusception (bowel obstruction)

PROPHYLAXIS: None available

SECTION VI - LABORATORY HAZARDS

LABORATORY-ACQUIRED INFECTIONS: None reported to date

SOURCES/SPECIMENS: Stools, rectal swab

PRIMARY HAZARDS: Ingestion; droplet exposure of the mucous membranes; inhalation of infectious aerosols

SPECIAL HAZARDS: None

SECTION VII - RECOMMENDED PRECAUTIONS

CONTAINMENT REQUIREMENTS: Biosafety level 2 practices and containment facilities for all activities involving virus and infectious body fluids and tissues

PROTECTIVE CLOTHING: Laboratory coat; gloves when skin contact with infectious materials is unavoidable

OTHER PRECAUTIONS: Frequent hand-washing and good hygiene

SECTION VIII - HANDLING INFORMATION

SPILLS: Allow aerosols to settle; wearing protective clothing gently cover spill with absorbent paper towel and apply 2% sodium hypochlorite to the spill starting at the perimeter and working towards the centre; wait 4 hours before clean up

DISPOSAL: Decontaminate all wastes before disposal; steam sterilization, chemical disinfection, incineration

STORAGE: In sealed containers that are appropriately labelled
SECTION IX - MISCELLANEOUS INFORMATION

Date prepared: April, 2001

Prepared by: Office of Laboratory Security, PHAC

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Important Notices