MATERIAL SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Hepatitis A virus

SYNONYM OR CROSS REFERENCE: Infectious hepatitis, epidemic hepatitis, epidemic jaundice, catarrhal jaundice, type A viral hepatitis, HAV, VHA, HA, MS-1 hepatitis, Botkins disease, infectious icterus

CHARACTERISTIC: Positive single-stranded RNA, no envelope, 27-30 nm diameter, Picornaviridae, Hepatovirus; can be cultured in cell culture

SECTION II - HEALTH HAZARD

PATHOGENICITY: Many infections are asymptomatic; abrupt onset with fever, malaise, anorexia, nausea and abdominal discomfort, followed within a few days by jaundice; mild illness (1-2 weeks) to severely disabling (6-9 months period); convalescence is prolonged; low case fatality rate and rare deaths usually in older patients; prolonged, relapsing hepatitis for up to 1 year occurs in 15% of cases; no chronic (long term) infections

EPIDEMIOLOGY: Worldwide, sporadic and epidemic, cyclic recurrences; outbreaks in institutions, housing projects, day-care centres; where environmental sanitation is poor infection commonly occurs at an early age; slowly evolving epidemics in developed countries in school-age children and young adults; asymptomatic; HAV infections accounts for 20-25% of clinically apparent hepatitis cases worldwide

HOST RANGE: Humans, marmosets (experimentally infected), chimpanzees, macaque monkeys, owl monkeys

INFECTION DOSE: Not known, however presumed to be in the range of 10-100 virus particles

MODE OF TRANSMISSION: Person-to-person by faecal-oral route; ingestion of contaminated food (i.e., shell fish) and water; rare instances of transmission by blood transfusion from a donor in the incubation period; hands may play an important role in the direct as well as the indirect spread of HAV

INCUBATION PERIOD: From 10-50 days, depending on dose; average 28-30 days

COMMUNICABILITY: Transmission in humans shows maximum infectivity during the latter half of the incubation period, and continuing for a few days after onset of jaundice; most cases are usually non-infectious after the first week of jaundice; HAV is excreted in a highly concentrated form in the feces for a short period of time, reaches peak level the week or two before onset of symptoms; HAV has been detected up to 3 months after resolution of the symptoms
SECTION III - DISSEMINATION

RESERVOIR: Humans; rarely captive chimpanzees; less frequently, certain other non-human primates

ZOO NOSIS: Enzootic focus has been identified in Malaysia but there is no suggestion of transmission to man; hepatitis A virus has been linked to large disease outbreaks caused by shellfish - transmitted virus

VECTORS: None

SECTION IV - VIABILITY

DRUG SUSCEPTIBILITY: Not affected by antibiotics

SUSCEPTIBILITY TO DISINFECTANTS: Susceptible to 1% sodium hypochlorite, 2% glutaraldehyde, formaldehyde; some non-lipid viruses are only moderately susceptible to 70% ethanol

PHYSICAL INACTIVATION: HAV is partially resistant to heat, still infectious after 10 - 12 hrs at 60° C; inactivation of HAV suspended in buffered saline occurs after 4 minutes at 70° C and immediately at 85° C and is inactivated by radiation; resistant to lip solvents; stable under extremes of pH (pH 3 - gastric acidity)

SURVIVAL OUTSIDE HOST: Survives in water and sewage for long periods, fragile in vitro, survival on fomites is > 7 days at low room humidify and 5° C stable under extremes of pH; HAV at 4° C, infectivity is reduced 0.5 log₁₀ after 6 weeks, no significant loss of antigenicity of samples after being stored at -70° C for > 6 months

SECTION V - MEDICAL

SURVEILLANCE: Monitor for symptoms; confirmation serologically, RIA, ELISA

FIRST AID/TREATMENT: Rest

IMMUNIZATION: Vaccine for active immunization is available and recommended especially for travellers to high risk areas

PROPHYLAXIS: Immunization for travellers to endemic areas and IG for close contacts of a case, day-care workers, IG can be given before or within 2 weeks after coming in contact with HAV

SECTION VI - LABORATORY HAZARDS

LABORATORY-ACQUIRED INFECTIONS: Low risk for laboratory personnel but a documented hazard in animal handlers and others working with infected chimpanzees

SOURCES/SPECIMENS: Feces of infected humans and chimpanzees

PRIMARY HAZARDS: Ingestion of feces, stool suspensions, food contaminated with faecal material or by food handler infected with HVA and other contaminated materials, importance of aerosol exposure has not been demonstrated
SPECIAL HAZARDS: None

SECTION VII - RECOMMENDED PRECAUTIONS

CONTAINMENT REQUIREMENTS: Biosafety level 2 practices and containment for activities with infected materials; Animal Biosafety level 2 for activities using naturally or experimentally infected chimpanzees

PROTECTIVE CLOTHING: Laboratory coat; gloves when direct contact with infectious materials is unavoidable; gloves and gown for work in biosafety cabinet

OTHER PRECAUTIONS: Animal care personnel should wear gloves and take other appropriate precautions to avoid possible faecal-oral exposure; good personal hygiene and thorough washing of hands

SECTION VIII - HANDLING INFORMATION

SPILLS: Allow aerosols to settle, wearing protective clothing, gently cover spill with paper towel and apply 1% sodium hypochlorite, starting at perimeter and working towards the centre; allow sufficient contact time (30 min) before clean up

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

STORAGE: In sealed containers that are appropriately labelled

SECTION IX - MISCELLANEOUS INFORMATION

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Prepared by: Office of Laboratory Security, PHAC

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