MATERIAL SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Listeria monocytogenes

SYNONYM OR CROSS REFERENCE: Listeriosis, Listerella

CHARACTERISTICS: Gram-positive, non-spore forming, aerobic bacilli; hemolytic and catalase positive; tendency to form chains and palisades, growth at 4°C, intracellular; food-borne human pathogen usually caused by serovars 1/2a, 1/2b and 4b

SECTION II - HEALTH HAZARD

PATHOGENICITY: Opportunistic pathogen manifested in the elderly, in neonates and or among immunocompromised individuals as meningencephalitis and/or septicemia; inapparent infection at all ages with consequence only during pregnancy; perinatal infections occur transplacentally and can result in abortion, stillbirth; meningitis, endocarditis, septicemia, and disseminated granulomatous lesions in adults

EPIDEMIOLOGY: Uncommonly diagnosed infection; typically sporadic; few recent outbreaks associated with food; nosocomial acquisition; 40% of clinical cases occur in infants; in adults infection occurs mainly after age 40; European studies have disclosed large numbers of human carriers; case fatality rate in newborns is 50%

HOST RANGE: Mammals, birds, fish, crustaceans and insects

INFECTIONOUS DOSE: Not known

MODE OF TRANSMISSION: In neonates, transmission from mother to fetus in utero or during passage through infected birth canal; direct contact with infectious material or soil contaminated with infected animal feces can result in papular lesions on hands and arms; ingestion of contaminated food (vegetables and dairy products have been reported); venereal contact and inhalation of the organism is possible; nursery outbreaks via hands of medical staff

INCUBATION PERIOD: Variable, outbreak cases have occurred 3-70 days following a single exposure to an implicated product, median incubation is estimated at 3 weeks

COMMUNICABILITY: Mothers of infected newborn infants may shed the agent for 7-10 days after delivery; infected individuals can shed organism in the stool for several months

SECTION III - DISSEMINATION

RESERVOIR: Infected domestic and wild mammals, fowl and humans; infection of foxes produces an encephalitis simulating rabies; asymptomatic fecal carriage in man (5%) and animals; frequently found in free-living water and mud; seasonal use of silage as fodder is frequently followed by an increased
incidence of listeriosis in animals

ZOOONOSIS: Yes, all domestic and wild animals are susceptible; proper precautions by farmers and veterinarians in handling aborted fetuses are recommended

VECTORS: None

SECTION IV - VIABILITY

DRUG SUSCEPTIBILITY: Sensitive to penicillin, ampicillin, aminoglycosides, tetracyclines (resistance has been observed), chloramphenicol

SUSCEPTIBILITY TO DISINFECTANTS: Moderately susceptible to disinfectants - 1% sodium hypochlorite, 70% ethanol, glutaraldehyde

PHYSICAL INACTIVATION: Sensitive to moist heat (121°C for at least 15 min) and dry heat (160-170°C for at least 1 hour); able to grow at low temperatures (-0.4 to -0.1°C); sensitive to short wave UV and gamma irradiation

SURVIVAL OUTSIDE HOST: Survives well in soil, water, food, feces

SECTION V - MEDICAL

SURVEILLANCE: Found in feces, CSF, blood; routine smear from all newborn infants examined for L. monocytogenes

FIRST AID/TREATMENT: Antibiotic therapy, penicillin or ampicillin alone or together with aminoglycosides; resistant to cephalosporins including third generation cephalosporins

IMMUNIZATION: None

PROPHYLAXIS: None

SECTION VI - LABORATORY HAZARDS

LABORATORY-ACQUIRED INFECTIONS: Not a common laboratory-associated infection; 2 reported infections

SOURCES/SPECIMENS: Cerebrospinal fluid, blood, placental or fetal tissue, genital tract secretions, amniotic fluid

PRIMARY HAZARDS: Experimentally infected animals are a risk factor to laboratory workers; ingestion is the common mode of exposure, however may cause eye and skin infection following direct exposure; parenteral inoculation, ingestion, exposure to highly concentrated aerosols

SPECIAL HAZARDS: None

SECTION VII - RECOMMENDED PRECAUTIONS

CONTAINMENT REQUIREMENTS: Biosafety level 2 practices, containment equipment and facilities for all activities involving clinical materials or cultures; biosafety cabinets should be used for activities likely to generate aerosols

PROTECTIVE CLOTHING: Laboratory coat; gloves and eye protection when direct contact with infectious materials is unavoidable

OTHER PRECAUTIONS: Pregnant women should avoid contact with infected materials

SECTION VIII - HANDLING INFORMATION
SPILLS: Allow aerosols to settle; wear protective clothing; gently cover spill with paper towels 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, chemical disinfection, incineration

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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Important Notices