

Section 1 - Infectious Agent

Agent Name: *Bacillus coagulans*

Agent Type: Bacteria

Taxonomy:

Family: Bacillaceae

Genus: *Bacillus*

Species: *B.coagulans*

Subspecies/Strain/Clonal Isolate:

Synonym/Cross Reference

Lactobacillus sporogenes

Characteristics

Brief Description: *B. coagulans* is a Gram-positive rod (0.9 by 3.0 to 5.0 µm in size), catalase positive, spore-forming, motile, and a facultative anaerobe. It may appear Gram-negative when entering the stationary phase of growth. The optimum temperature for growth is 50 °C (122 °F); range of temperatures tolerated are 30–55 °C (86–131 °F).

Properties:

Section 2 - Hazard Identification

Pathogenicity/Toxicity

Rare opportunistic pathogen, *B. coagulans* has been implicated in human bloodstream infections in cancer patients

Predisposing Factors: Immunocompromised patients.

Communicability

This organism is utilized as a probiotic in the probiotic industry.

Epidemiology

World-wide distribution. Found in soils.

Host Range

Natural Host(s): None

Other Host(s): None

Infectious Dose

Unknown

Incubation Period

Unknown

Section 3 - Dissemination

Reservoir

Soil

Vectors

None

Zoonosis / Reverse Zoonosis

None

Section 4 - Dissemination

Drug Susceptibility

B. subtilis is susceptible to penicillins in addition to vancomycin, clindamycin, aminoglycosides, and third-generation cephalosporin agents.

Drug Resistance

None reported

Susceptibility to Disinfectants

70% ethyl alcohol or 0.125% glutaraldehyde, all with a contact time of 1 minute or 5mg/L of hypochlorite with a contact time of 5 minutes.

Physical Inactivation

Inactivated by heat (100 degrees C for 1 min.) and gamma irradiation.

Survival Outside Host

Soil borne pathogen. No other information available.

Section 5 - First Aid and Medical

Surveillance

Infection can be confirmed by culturing and identification of bacteria from the infection site. Note: All diagnostic methods are not necessarily available in all countries

First Aid / Treatment

Antibiotic therapy may be required in more serious cases particularly in young, elderly or immunocompromised patients.

Immunization

None

Prophylaxis

None

Section 6 - Laboratory Hazards

Laboratory Acquired Infections

None reported

Sources / Specimens

May be isolated from medical preparations and silage. Spores are relatively scarce in soils.

Primary Hazards

None

Special Hazards

None.

Section 7 - Exposure Controls and Personal Protection

Risk Group Classification

What is the Risk Group classification in humans and animals for the pathogen?

Human Risk Group Classification RG1

Animal Risk Group Classification RG1

Containment Requirements

Containment Level: CL1

Containment Zone Requirements:

Containment Level 1 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials, animals, or cultures.

Protective Clothing

Lab coat. Gloves when direct skin contact with infected materials or animals is unavoidable. Eye protection must be used where there is a known or potential risk of exposure to splashes.

Other Precautions

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.

Section 8 - Handling and Storage**Spills**

Allow aerosols to settle. Wearing protective clothing, gently cover the spill with absorbent paper towel and apply suitable disinfectant, starting at the perimeter and working towards the centre. Allow sufficient contact time before clean up.

Disposal

Decontaminate all wastes that contain or have come in contact with the infectious organism by autoclave, chemical disinfection, gamma irradiation, or incineration before disposing.

Storage

The infectious agent should be stored in appropriately labelled leak-proof containers in a locked area. Containers of infectious material or toxins stored outside the containment zone must be labelled, leakproof, impact resistant, and kept either in locked storage equipment or within an area with limited access.

Section 9 - Regulatory Information

The import, transport, and use of pathogens in Canada is regulated under many regulatory bodies, including the Public Health Agency of Canada, Health Canada, Canadian Food Inspection Agency, Environment Canada, and Transport Canada. Users are responsible for ensuring they are compliant with all relevant acts, regulations, guidelines, and standards.

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References

Risk Group determination from "PHAC Biological Agent Search".

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