Pathogen Safety Data Sheet

Section 1 - Infectious Agent

Agent Name: **Staphylococcus epidermidis**

Agent Type: Bacteria

Taxonomy:

Family: Staphylococcaceae Genus: Staphylococcus

Species: *S. epidermidis*

Subspecies/Strain/Clonal Isolate:

Synonym/Cross Reference
Staph epidermidis

Characteristics

Brief Description: Nonmotile, Gram-positive cocci, arranged in grape-like clusters. It forms white, raised, cohesive colonies about 1–2 mm in diameter after overnight incubation, and is not hemolytic on blood agar.[4] It is a catalase-positive,[8] coagulase-negative, facultative anaerobe that can grow by aerobic respiration or by fermentation. Some strains may not ferment.

Properties: S. epidermidis excels in forming biofilms, sticky agglomerations that inhibit major host defense mechanisms. Furthermore, S. epidermidis produces a series of protective surface polymers and exoenzymes. Moreover, S. epidermidis has the capacity to secrete strongly cytolytic members of the phenol-soluble modulin (PSM) family, but PSMs in S. epidermidis overall appear to participate primarily in biofilm development (2).

Section 2 - Hazard Identification

Pathogenicity/Toxicity
S. epidermidis represents the most common source of infections on indwelling medical devices. S. epidermidis infections only rarely develop into life-threatening diseases(3).

Predisposing Factors: None

Communicability
Normal part of the skin flora.

Epidemiology
World-wide naturally part of the skin flora.

Host Range

Natural Host(s): Human

Other Host(s): None.

Infectious Dose
Unknown.

Incubation Period
Unknown

Section 3 - Dissemination

Reservoir
Human skin.

Vectors
None.

Zoonosis / Reverse Zoonosis
None.

Section 4 - Dissemination

Drug Susceptibility
Susceptible to vancomycin to which rifampin or aminoglycoside is added.

Drug Resistance
Resistant to methicillin and all penicillins, penems, carbapanems, and cephalosporins.

Susceptibility to Disinfectants
Susceptible to 70% ethanol, clorhexidine, 1% sodium hypochlorite, 2% glutaraldehyde, 0.25% benzalkonium chloride, and formaldehyde.

Physical Inactivation
Inactivation and sterilization using moist heat should be at 121°C for 15 minutes or longer, dry heat at 170 - 250°C or higher for 30 minutes or more.

Survival Outside Host
Unknown.

Section 5 - First Aid and Medical

Surveillance
Diagnosis is made by bacteriological culture on selective/nonselective culture media and laboratory identification.

First Aid / Treatment
Removal of the indwelling medical device. Proper antibiotic therapy is required for more serious infections.

Immunization
None.

Prophylaxis
None.

Section 6 - Laboratory Hazards

Laboratory Acquired Infections
None reported.

Sources / Specimens
Human skin, contaminated medical devices.

Primary Hazards
What is the primary exposure hazaard? Examples: Ingestion of infectious material; exposure of mucous membranes/skin to infectious material; autoinoculation with infectious material; inhalation of airborne or aerosolized infectious material; bites/scratches of an infected animal; exposure to infectious material in animals waste or animal carcasses; exposure to infectious material on fomites.

Special Hazards

What other hazards exist that an individual should be aware of when dealing with this pathogen? Is contamination of shipping or packaging material possible or likely (e.g., in diagnostic labs that receive potentially contaminated testing request forms shipped in the same box as the samples)?
If there are no special hazards for this agent enter “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.
If there are no special hazards for this agent enter “none”.

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.

PSDS Creation Date: Jan 9, 2018

Revision Number:

PSDS Revision Date:

Revisions were made to Sections:

The Information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express ori mplied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the University be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the University has been advised of the possibility of such damages.

Prepared by
Nipissing University
Biosafety Officer

Dave Vadnais

Digitally signed by Dave Vadnais
DN: cn=Dave Vadnais, o=Nipissing University, ou=Environmental Health and Safety, email=davev@nipissingu.ca, c=CA
Date: 2018.01.09 15:40:16 -05'00'

References

1) Risk Group determination from "PHAC Biological Agent Search".
2) Otto, M. Staphylococcus epidermidis pathogenesis. Methods Mol Biol. 2014; 1106-17-31. doi: 10.1007/978-1-62703-736-5_2
3) Otto M. Staphylococcus epidermidis – the “accidental” pathogen. Nature reviews Microbiology. 2009;7(8):555-567. doi:10.1038/nrmicro2182.