

Section 1 - Infectious Agent

Agent Name: *Staphylococcus saprophyticus*

Agent Type: Bacteria

Taxonomy:

Family: Staphylococcaceae

Genus: *Staphylococcus*

Species: *S. saprophyticus*

Subspecies/Strain/Clonal Isolate:

Synonym/Cross Reference

Characteristics

Brief Description: *Staphylococcus saprophyticus* is a Gram-positive, coagulase-negative facultative species of *Staphylococcus* and is globular shaped, and is a facultative anaerobe.

Properties: *S. saprophyticus* has the capacity to selectively adhere to human urothelium. The adhesin for *S. saprophyticus* is a lactosamine structure. *S. saprophyticus* produces no exotoxins.

Section 2 - Hazard Identification

Pathogenicity/Toxicity

S. saprophyticus urinary tract infections present with symptomatic cystitis. Symptoms include a burning sensation when passing urine, the urge to urinate more often than usual, a 'dripping effect' after urination, weak bladder, a bloated feeling with sharp razor pains in the lower abdomen around the bladder and ovary areas, and razor-like pains during sexual intercourse. Flank pain has been noted and can be confused with the symptoms of kidney stones. Signs and symptoms of renal involvement are also often registered.

Has also been implicated in bacteremia originating from central venous catheterization (2).

Predisposing Factors: Immunocompromised patients.

Communicability

Sexual activity increases the risk of *S. saprophyticus* UTIs because bacteria are displaced from the normal flora of the vagina and perineum into the urethra.

Epidemiology

Maintained in the human population.

Host Range

Natural Host(s): Humans and other mammalian animals.

Other Host(s): None.

Infectious Dose

Unknown.

Incubation Period

24 hours after sex.

Section 3 - Dissemination

Reservoir

Humans.

<p>Vectors None.</p>
<p>Zoonosis / Reverse Zoonosis None.</p>
<p>Section 4 - Dissemination</p>
<p>Drug Susceptibility S. saprophyticus urinary tract infections are usually treated with trimethoprim-sulfamethoxazole or with a quinolone such as norfloxacin. It has also been shown to be susceptible to ampicillin & ceftriaxone.</p>
<p>Drug Resistance methicillin resistance has been reported.</p>
<p>Susceptibility to Disinfectants Susceptible to 70% ethanol, clorhexidine, 1% sodium hypochlorite, 2% glutaraldehyde, 0.25% benzalkonium chloride, and formaldehyde.</p>
<p>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.</p>
<p>Survival Outside Host Does not survive outside of the host.</p>
<p>Section 5 - First Aid and Medical</p>
<p>Surveillance Diagnosis is made by bacteriological culture on selective/nonselective culture media and laboratory identification.</p>
<p>First Aid / Treatment S. saprophyticus urinary tract infections are usually treated with trimethoprim-sulfamethoxazole or with a quinolone such as norfloxacin. It has also been shown to be susceptible to ampicillin & ceftriaxone.</p>
<p>Immunization None.</p>
<p>Prophylaxis None.</p>
<p>Section 6 - Laboratory Hazards</p>
<p>Laboratory Acquired Infections None reported.</p>
<p>Sources / Specimens Urine; faeces.</p>
<p>Primary Hazards Accidental parenteral inoculation, inhalation of infectious aerosols, accidental ingestion, or direct skin contact.</p>

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.

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.

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References

- 1) Risk Group determination from "PHAC Biological Agent Search".
- 2) Hur, J, Lee, A, et. al. Staphylococcus saprophyticus bacteremia originating from urinary tract infections: a case report and literature review. Infect Chemother. 2016 Jun; 48(2): 136-139