BIOLOGY

Legionnaires Disease Synopsis

CONTENT

Definition: Legionnaires disease (Legionellosis) is an infection of the lungs (similar to pneumonia) that is quite serious, with approx. 10% of all cases being fatal.

Cause: Legionnaires disease is caused by a pathogen in the form of the bacteria strand *'Legionella'*. There are over forty strains of this type of bacteria; however, very few of these strains can cause the manifestation of Legionnaires disease within humans. The most common of these strains are *'pneumophila'* and *'longbeachae'*. *'Pneumophila'* can be inhaled from the air in contaminated areas, such as air conditioning cooling towers, whirlpool spas, showerheads and other forms of water. *'Longbeachae'* thrives in soils and potting mixes, infecting people who inhale the dust from these materials.

Transmission: The bacterium thrives in warm, wet places within the environment, and can be contracted through the inhalation or aspiration of the bacteria, via fine water droplets called *'aerosols'*. You cannot contract Legionnaires through contact with another person or through drinking water contaminated by the *'Legionella'* bacteria.

Host Response: Those who are infected by the disease usually become very sick with an acute pneumonia, and can sometimes die as a result of internal asphyxiation, with the bacterium and fluid from the lungs surrounding blood vessels into the alveoli, impairing oxygen transportation. When the host's body detects the infection, it produces a

Major Symptoms: Similar to that of a severe flu: fever, headache (usually intense), shortness of breath, muscle aches and pains, loss of appetite, diarrhoea ,chills, tiredness and a dry cough. Once infected with the bacteria, it can take two to 10 days to begin displaying symptoms, with most cases reportedly appearing after five or six days.

Treatment: Individuals who have contracted Legionnaires need to be treated in hospital, in the intensive care unit depending on the severity of the case. Regular dosages of antibiotics (e.g. ciprofloxacin and/or rifampicin) are administered to the infected patient's body via the 'in-vitro' method. The sooner the disease is detected, the better and faster the treatment for the patient.

Prevention: There is no current vaccine against Legionnaires, however, seeing as many cases are a result of the bacteria growing in damp soils and potting mixes, people coming into contact with these materials (e.g. gardeners) could:

- Always wear face masks and gloves, even if just opening a bag.
- Moisten the contents of potting mixes, in order to minimise dust.
- Always wash hands after handling the soil or mix.

Control: The disease is not transmittable from one human to another, and so infected individuals do not need to be quarantined. Likewise, drinking water infected with the bacterium does not generally give the disease to individuals whom have drunk the water, and so special filters are not a necessity. However, piping systems using different materials can inhibit or support the growth of *'Leginella'* bacteria, with copper inhibiting its growth and plastic supporting it. In order to control this, a hot water system that maintains a temperature level of 54.4° Celsius (130° Fahrenheit) will inhibit any growth, no matter the piping material. Also, recent cases in have involved the air conditioning

units of buildings spreading the airborne bacteria all throughout the building. In order to control these outbreaks, the systems cooling towers (which contain water) will have to be routinely cultured, in order to kill off the bacteria and prevent widespread cases of Legionnaires disease.

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