

# TerranearPMC Safety Share

## **Week of October 10, 2011 – Listeria: What is it?**

The recent listeria outbreak in cantaloupe has been noted as the deadliest outbreak of food-related illness in more than 10 years in the United States. At least 21 deaths (as of Saturday, 10/8/2011) and 100 illnesses have been associated with listeria infection; all of which originated from cantaloupes from Jensen Farms, in Colorado. Because symptoms of listeria infection can take weeks to become apparent, FDA Commissioner Margaret Hamburg speculates that there shall be more cases throughout the month of October.

The first documented case of *Listeria* was in 1924 when two researchers independently identified *Listeria monocytogenes* from animal outbreaks and named it in honor of surgeon and early antiseptic advocate Joseph Lister (Today we have the product/mouthwash, Listerine, also named after Dr. Lister).

The Centers for Disease Control (CDC) is warning consumers to throw away cantaloupes if the origin is unknown. However, if one can be certain that cantaloupes are not from Jensen farms, they are OK to eat. The affected cantaloupes from Jensen Farms were shipped between July 29 and Sept. 10, 2011, with a recall on September 14. The cantaloupes were shipped to 25 different states with health effects due to listeria appearing as far away as Maryland. While this recent outbreak has been attributed solely to tainted cantaloupe, in the past, listeria outbreaks have originated from other foods, such as sprouts and celery.

The complete name of the bacteria that is responsible for the recent health warnings is *listeria monocytogenes*, where the “listeria,” is the genera: the category that contains seven species, of which the actual species-of-concern is monocytogenes. It is typically found in soils; however, it may also be found in stream water and sewage plants. Animals (sheep, cattle, goats, horses, pigs, and other domesticated animals) are also carriers as listeria. As such, listeria has been found in many food products including uncooked meats, uncooked vegetables and fruits, unpasteurized milk, and foods made from unpasteurized milk, including processed foods. When animals are infected, listeriosis is referred to as *circling disease* because infected animals can be typically observed to be walking in circles.

While pasteurization and sufficient cooking kill listeria, contamination may occur after cooking and before packaging. For example, meat-processing plants producing ready-to-eat foods, such as hot dogs and deli meats, must follow extensive sanitation policies and procedures to prevent listeria contamination. *Listeria monocytogenes* is considered to be quite hardy and can grow in temperatures from 39.2 °F (the temperature of a refrigerator), to 98.6 °F (the body's internal temperature). As such, the refrigerator will support growth of listeria, which is different from many other types of bacteria, while the human body provides an excellent host environment.

Listeriosis has a mortality rate of 25% (*Salmonella*, in comparison, has a mortality rate estimated at less than 1%). Typical health effects associated with this contaminant are sepsis (severe blood

illness that impairs internal organs) and meningitis (inflammation of the protective membranes of the brain and spinal cord), which, in turn, may lead to encephalitis (inflammation of the brain). Typical symptoms of listeriosis include fever, muscle aches, and sometimes nausea or diarrhea. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur.

Persons that are most susceptible to listeria are those with weakened immune systems, such as the elderly, infants, people with AIDS, people undergoing chemotherapy or organ-rejection medications, as well as people with diabetes or kidney disease. But that does not mean other persons cannot contract this disease (while exhibiting standard symptoms). In addition, listeria can breach the placental barrier of pregnant women, who may experience only a mild, flu-like illness as their embryos become infected. At the same time, an infected pregnant woman may develop complications that lead to miscarriage or stillbirth, premature birth or a fatal infection after the baby is born. For babies, signs of listeria infection include fever, vomiting, low interest in being fed and irritability.

Once listeria is introduced into the body, it attaches to the surrounding tissues of various organs (aka epithelial cells) and defeats the natural defense mechanisms within a cell and actually uses these same defenses to transport itself to adjacent cells within the organ, thereby infecting and compromising the specific biologic functions of that organ. Without a strong immune-response system, the listeria bacteria can grow and cause increasing damage to the point of death. This is why persons with weakened immune systems are more susceptible to listeria.

### Prevention

While washing fruits and vegetables is always important, in the case of listeria, washing suspect cantaloupe (or other items) can cause the bacteria to spread to the inside of the fruit.

Preventing listeria as a food illness requires effective sanitation of food contact surfaces. Alcohol is an effective topical sanitizer against listeria. Quaternary ammonium can be used in conjunction with alcohol as a food contact safe sanitizer with increased duration of the sanitizing action. Thus, preventing listeriosis is accomplished by carrying out an effective practice of sanitizing food contact surfaces. Refrigerated foods in the home should be kept below 4 °C (39.2 °F) to discourage bacterial growth. Once a person has become infected, the Mayo Clinic acknowledges that antibiotics are effective treatments. Such antibiotics include ampicillin, vancomycin, ciprofloxacin, linezolid, azithromycin (however there is some debate regarding the use of vancomycin as an effective medicine). Also mixtures of bacteriophages (a category of viruses that infect bacteria!) have also proven effective in the treatment of Listeria.

**Don't be trapped by dogma - which is living with the results of other people's thinking. Don't let the noise of others' opinions drown out your own inner voice."**

Steve Jobs (Thanks and RIP)