

Listeria monocytogenes

LISTERIA MONOCYTOGENES IS A GRAM-POSITIVE BACTERIUM, MOTILE BY MEANS OF FLAGELLA. SOME STUDIES SUGGEST THAT 1-10% OF HUMANS MAY BE INTESTINAL CARRIERS OF *L. MONOCYTOGENES*. IT HAS BEEN FOUND IN AT LEAST 37 MAMMALIAN SPECIES, BOTH DOMESTIC AND FERAL, AS WELL AS AT LEAST 17 SPECIES OF BIRDS AND POSSIBLY SOME SPECIES OF FISH AND SHELLFISH.

NAME OF ACUTE DISEASE

Listeriosis is the name of the general group of disorders caused by *L. monocytogenes*.

NATURE OF DISEASE

Listeriosis is clinically defined when the organism is isolated from blood, cerebrospinal fluid, or an otherwise normally sterile site (e.g. placenta, fetus).

The manifestations of listeriosis include septicemia, meningitis (or meningoencephalitis), encephalitis, and intrauterine or cervical infections in pregnant women, which may result in spontaneous abortion (2nd/3rd trimester) or stillbirth. The onset of the aforementioned disorders is usually preceded by influenza-like symptoms including persistent fever. It was reported that gastrointestinal symptoms such as nausea, vomiting, and diarrhea may precede more serious forms of listeriosis or may be the only symptoms expressed. Gastrointestinal symptoms were epidemiologically associated with use of antacids or cimetidine. The onset time to serious forms of listeriosis is unknown but may range from a few days to three weeks. The onset time to gastrointestinal symptoms is unknown but is probably greater than 12 hours.

The infective dose of *L. monocytogenes* is unknown but is believed to vary with the strain and susceptibility of the victim. From cases contracted through raw or supposedly pasteurized milk, it is safe to assume that in susceptible persons, fewer than 1,000 total

organisms may cause disease. *L. monocytogenes* may invade the gastrointestinal epithelium. Once the bacterium enters the host's monocytes, macrophages, or polymorphonuclear leukocytes, it is bloodborne (septicemic) and can grow. Its presence intracellularly in phagocytic cells also permits access to the brain and probably transplacental migration to the fetus in pregnant women. The pathogenesis of *L. monocytogenes* centers on its ability to survive and multiply in phagocytic host cells.

ASSOCIATED FOODS

L. monocytogenes has been associated with such foods as raw milk, supposedly pasteurized fluid milk, cheeses (particularly soft-ripened varieties), ice cream, raw vegetables, fermented raw-meat sausages, raw and cooked poultry, raw meats (all types), and raw and smoked fish. Its ability to grow at temperatures as low as 3°C permits its multiplication in refrigerated foods.

COMPLICATIONS

Most healthy persons probably show no symptoms. The "complications" are the usual clinical expressions of the disease. When listeric meningitis occurs, the overall mortality may be as high as 70%; from septicemia 50%, from perinatal/neonatal infections greater than 80%. In infections during pregnancy, the mother usually survives. Successful treatment with parenteral penicillin or ampicillin has been reported. Trimethoprim-sulfamethoxazole has been shown effective in patients allergic to penicillin.

Listeria monocytogenes can be isolated from soil, silage, and other environmental sources. *L. monocytogenes* is quite hardy and resists the deleterious effects of freezing, drying, and heat remarkably well for a bacterium that does not form spores.

Most *L. monocytogenes* are pathogenic to some degree.

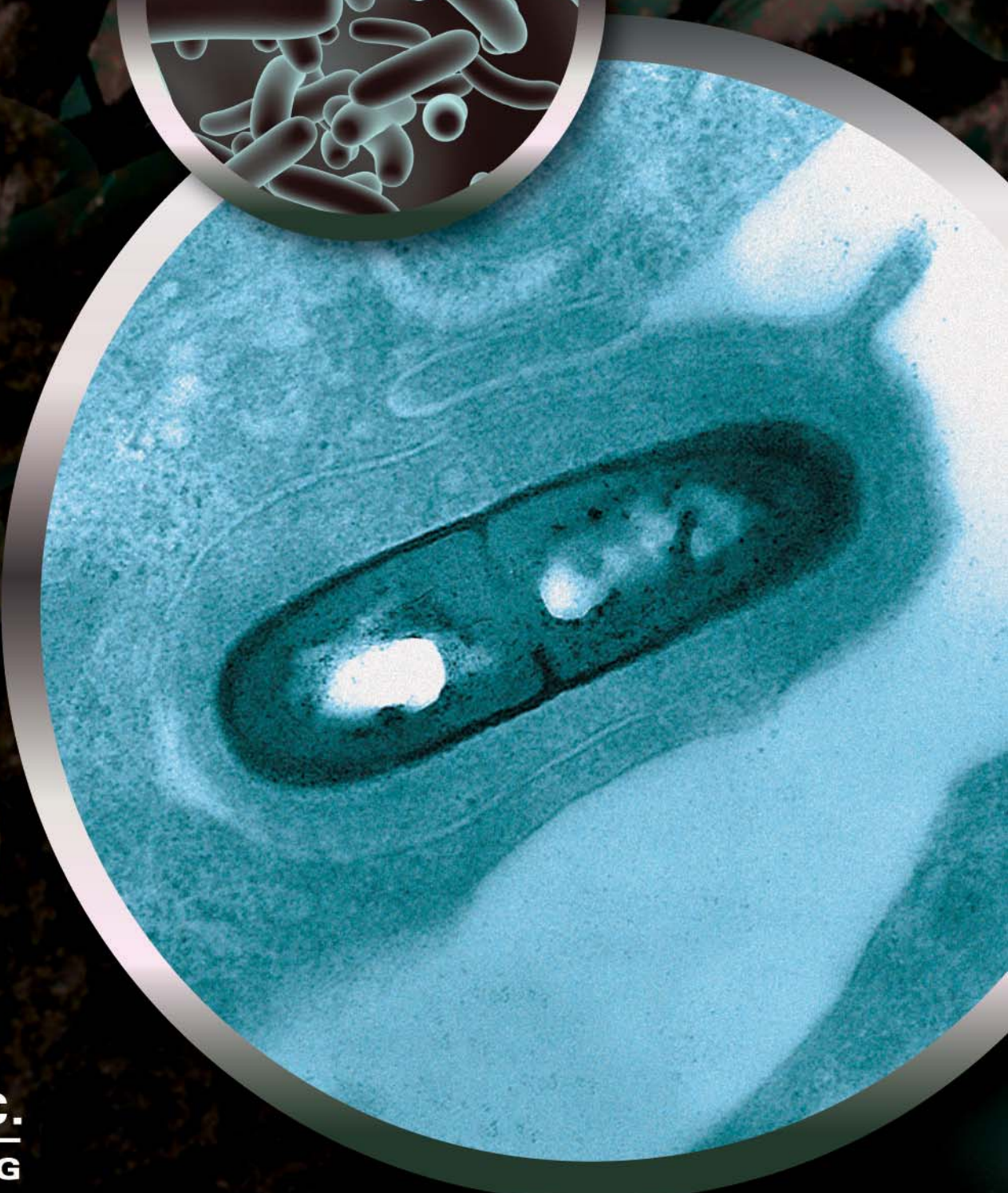
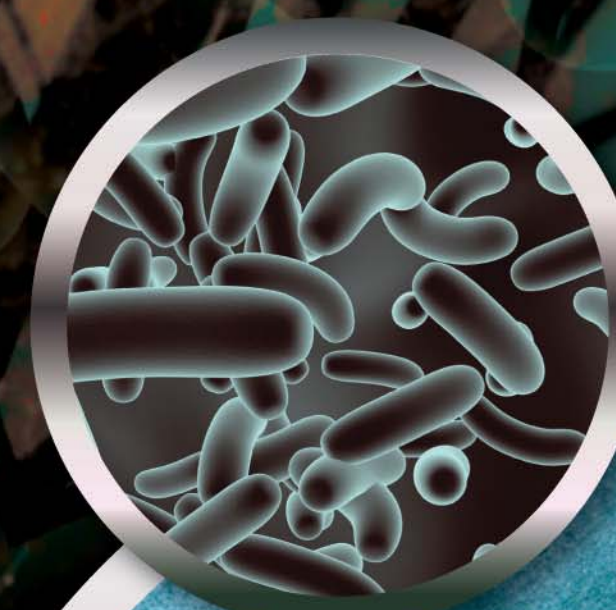
TARGET POPULATIONS

The main target populations for listeriosis are:

- Pregnant women/fetus - perinatal and neonatal infections
- Persons immunocompromised by corticosteroids, anticancer drugs, graft suppression therapy, AIDS
- Cancer patients - leukemic patients particularly
- Less frequently reported - diabetic, cirrhotic, asthmatic, and ulcerative colitis patients
- The elderly
- Normal people — some reports suggest that normal, healthy people are at risk, although antacids or cimetidine may predispose. A listeriosis outbreak in Switzerland involving cheese suggested that healthy uncompromised individuals could develop the disease, particularly if the foodstuff was heavily contaminated with the organism.

FREQUENCY OF THE DISEASE

The 1987 incidence data prospectively collected by CDC suggests that there are at least 1600 cases of listeriosis with 415 deaths per year in the U.S. The vast majority of cases are sporadic, making epidemiological links to food very difficult.



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