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Listeria monocytogenes – a threat to the health of restaurant guests

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Listeria monocytogenes (L.m.) is a pathogenic bacterium associated with food. It is mainly transmitted through ready-to-eat food such as soft cheese, vacuum-packed gravlax or cold-smoked salmon, salads, and undercooked meat. The clinical picture consists of septicaemia and/or meningitis, and abortion. Despite hospital treatment, 20% to 50% of those contracting an infection will die. Individuals with weakened immune systems are more susceptible to infection. Many of the most risky foods are popular ingredients or dishes in Swedish restaurants. To avoid serving up listeria to one’s guests, it is essential to have knowledge about when food items are risky, how L.m. grows, and its distribution and characteristics.

Our studies

We have characterized 932 isolates of L.m., isolated 1958–2010 from patients suffering from listeriosis. The dominant serovar in Sweden during the 1980s was serovar 4b. Using pulsed-field gel electrophoresis (PFGE), we showed that several cases of 4b were associated with the consumption of raw soft cheeses. However, as hygiene levels in southern European cheese production subsequently improved, the number of 4b cases decreased, and serovar 1/2a has been the dominant serovar in human listeriosis in Sweden since 1996. Based on serovars and PFGE types, the human cases were associated with L.m. strains found in vacuum-packed gravlax or cold-smoked salmon. According to a bachelor's thesis published in 2012 at the School of Hospitality, Culinary Arts and Meal Sciences, 13.3% of purchased vacuum-packed gravlax and 14.2% of cold-smoked vacuum-packed salmon harboured L.m.

Examination of DNA profiles obtained by PFGE and the identification of PFGE types is a delicate and tedious work. We have therefore developed a stepwise procedure by first identifying the PFGE group using the smaller band patterns (<145.5 kb) and then determining PFGE types based on band patterns >145.5 kb.