Imported food risk statement

Ready-to-eat cooked chicken meat and *Listeria monocytogenes*

**Commodity:** Ready-to-eat (RTE) cooked chicken meat (stored chilled or frozen). This includes cooked chicken fillets or pieces that have been cut, sliced, diced, marinated or flavoured etc. Ambient stable sealed packages are not covered by this risk statement.

**Microorganism:** *Listeria monocytogenes*

<table>
<thead>
<tr>
<th>Recommendation and rationale</th>
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<td>Is <em>L. monocytogenes</em> in RTE cooked chicken meat a medium or high risk to public health:</td>
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<td>☑ Yes</td>
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**Rationale:**
- Human illness has been associated with RTE cooked chicken meat contaminated with *L. monocytogenes* and RTE cooked chicken is consumed by the population of all ages. For susceptible populations, infection with *L. monocytogenes* can have severe consequences
- Food recall data in Australia and compliance data internationally have shown detections of *L. monocytogenes* in cooked chicken meat
- *L. monocytogenes* contamination can occur after heat treatment and *L. monocytogenes* is able to grow during refrigerated storage. This commodity is able to support the growth of *L. monocytogenes* during the shelf-life of the product

**General description**

**Nature of the microorganism:**

*L. monocytogenes* is a Gram-positive, non-spore forming rod-shaped bacterium that can grow in both aerobic and anaerobic conditions. It is found throughout the environment and has been isolated from domestic and wild animals, birds, soil, vegetation, fodder and wet areas of food processing environments (FSANZ 2013).

A distinguishing feature of *L. monocytogenes* is its ability to grow at refrigeration temperatures. Growth can occur at temperatures between 1.5 – 45.0°C, pH of 4.0 – 9.6 and a minimum water activity of 0.90 when other conditions are near optimum. Temperatures above 50°C are lethal to *L. monocytogenes*, however, it is able to survive frozen storage at -18°C (ICMSF 1996; FSANZ 2013).

**Adverse health effects:**

For susceptible populations *L. monocytogenes* is a severe hazard as it can cause life threatening illness (ICMSF 2002). People at risk of invasive listeriosis include pregnant women and their foetuses, newborn babies, the elderly and immunocompromised individuals (such as cancer, transplant and HIV/AIDS patients). Less frequently reported, but also at a greater risk, are patients with diabetes, asthma, cirrhosis and ulcerative colitis (FSANZ 2013).

In pregnant women invasive listeriosis can cause spontaneous abortion, stillbirth or neonatal infection. Influenza-like symptoms, fever, and gastrointestinal symptoms can also occur in the mother. In immunocompromised individuals and the elderly invasive listeriosis can cause potentially fatal bacterial meningitis with symptoms of fever, malaise, ataxia and altered mental status. The onset of illness of invasive listeriosis generally ranges from 3 days to 3 months after infection. Invasive listeriosis has a fatality rate of 15 – 30% (FDA 2012; FSANZ 2013).

Nearly all cases of listeriosis in susceptible people result from the consumption of high numbers of the

FSANZ provides risk assessment advice to the Department of Agriculture on the level of public health risk associated with certain foods. For more information on how food is regulated in Australia refer to the FSANZ website or for information on how imported food is managed refer to the Department of Agriculture website.
pathogen (Chen et al. 2003; FAO/WHO 2004). However, some foods support the growth of *L. monocytogenes*, enabling high levels of *L. monocytogenes* to be achieved that may lead to illness.

Exposure to *L. monocytogenes* has minimal impact on the general healthy population. If illness does occur it is often mild and may be mistaken for a viral infection or flu (FSANZ 2012).

**Consumption patterns:**

Twelve percent of children (aged 2-16 years), 16% of adults (aged 17-69 years) and 13% of people aged 70 and above reported consumption of cooked chicken meat in the 1995 National Nutrition Survey (McLennan and Podger 1999). In the 2007 Australian National Children’s Nutrition and Physical Activity Survey, 33% of children (aged 2-16 years) reported consumption of cooked chicken meat (DOHA 2008).

**Key risk factors:**

*L. monocytogenes* has been identified as a concern for RTE poultry meat products in previous work performed by FSANZ (2005). Cooked chicken meat has received a listericidal treatment; however, re-contamination can occur after this processing step as *L. monocytogenes* is an ubiquitous organism and can become established in processing environments. The inherent characteristics of this commodity allow the growth of *L. monocytogenes*, even when stored at <4°C.

**Risk mitigation:**

Good hygienic practices in food manufacturing and food handling minimise *L. monocytogenes* contamination of food. Control measures that prevent the growth of high levels of *L. monocytogenes* in the food are expected to have the greatest impact on reducing rates of listeriosis, as nearly all cases of listeriosis result from the consumption of high numbers of the pathogen.

In Australia Division 3 of *Standard 4.2.3 of the Australia New Zealand Food Standards Code* (the Code) states that producers of RTE meat must implement a food safety management system which identifies, evaluates and controls food safety hazards. *Standard 1.6.1 of the Code* contains limits for *L. monocytogenes* based on whether growth can occur or not:

- For RTE food in which growth of *L. monocytogenes* will not occur n=5, m=10<sup>2</sup> cfu/g
- For RTE food in which growth of *L. monocytogenes* can occur n = 5, m=not detected in 25g

Public information for vulnerable populations to avoid consumption of RTE food that supports the growth of *L. monocytogenes* is available on various government websites including FSANZ’s website.

**Compliance history:**

The only country currently permitted to import cooked chicken meat into Australia is New Zealand. The imported food compliance data sourced from the Imported Food Inspection Scheme of the Australian Department of Agriculture was provided for December 2008 – September 2011. The compliance data showed that for the 91 *L. monocytogenes* tests applied to cooked chicken meat during this period there were no fails.

There have been eight notifications on the European Commission’s Rapid Alert System for Food and Feed (RASFF) for *L. monocytogenes* in chicken meat, frozen chicken meat and chicken meat preparations during the period January 2007 – June 2013. These detections occurred from multiple countries. Of these notifications, three were for cooked product. It was not stated if the remaining products were cooked or uncooked.

There have been two food recalls in Australia of cooked chicken meat due to the presence of *L. monocytogenes* from January 2007 – June 2013, these recalls were both for domestically produced product.

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<sup>1</sup> Testing of cooked chicken meat from New Zealand was discontinued in 2011 under the Trans-Tasman Mutual Recognition Agreement
Surveillance information:

Listeriosis is a notifiable disease in all Australian states and territories with a notification rate in 2012 of 0.4 cases per 100,000 population (93 cases). The previous five year mean was 0.3 cases per 100,000 population per year (ranging from 0.2 – 0.4 cases per 100,000 population per year) (FSANZ 2013).

Illness associated with consumption of RTE cooked chicken meat contaminated with *L. monocytogenes*

There are a number of reported listeriosis outbreaks associated with consumption of RTE cooked chicken meat. Examples are listed below:

- Outbreak in Australia in 2009, 40 cases which included eight perinatal cases and three fatalities from consumption of cooked chicken in pre-packaged chicken wraps. The outbreak strain of *Listeria* was isolated from the chicken meat supplier and there were deficiencies in the food safety program for the production of RTE chicken meat (OzFoodNet 2009)
- Fatal case of listeriosis in the United States in 2008 due to consumption of chicken salad. *L. monocytogenes* was isolated from unopened product and other chicken products from the same production establishment (Marcus et al. 2009)
- Outbreak in Australia (SA) in 1996, five cases including one fatality from consumption of cooked chicken. *L. monocytogenes* was isolated from chicken samples and the area of premises where deboning of chicken occurred (Hall et al. 1996)

Prevalence of *L. monocytogenes* in RTE cooked chicken meat

Surveys of RTE poultry products have isolated *L. monocytogenes* in 0.5 – 15% of samples (Awaishheh 2010; FSA 2011). Examples of surveys are listed below:

- Survey in Australia (NSW) in 2010, *L. monocytogenes* was isolated from 5.3% of cold shredded/diced cooked chicken samples at retail (n=38), although levels were not reported (NSWFA 2011)
- Survey in the United Kingdom in 2007, *L. monocytogenes* was isolated from 0.5% of sliced RTE cooked chicken meat at retail, the level of contamination was <100 CFU/g (n=402) (FSA 2011)
- Survey in Jordan in 2006 – 2007, *L. monocytogenes* was isolated from 15% of RTE poultry products from markets and processing plants (n=120), the level of contamination was ≤100 CFU/g (Awaishheh 2010)

Other relevant standards or guidelines

- Codex general principles of food hygiene *CAC/RCP 1 – 1969* follows the food chain from primary production through to final consumption, highlighting the key hygiene controls at each stage (Codex 2003)
- Codex code of hygienic practice for meat *CAC/RCP 58-2005* covers additional hygienic provisions for raw meat, meat preparations and manufactured meat from the time of live animal production up to the point of retail sale (Codex 2005)
- Codex guidelines on the application of general principles of food hygiene to the control of *L. monocytogenes* in foods *CAC/GL 61 – 2007* (Codex 2009) states:
  - For RTE foods in which growth of *L. monocytogenes* can occur the microbiological criterion for *L. monocytogenes* is n=5, c=0, m=absence in 25g
  - For RTE foods in which growth of *L. monocytogenes* cannot occur the microbiological criterion for *L. monocytogenes* is n=5, c=0, m=100 CFU/g

Approach by overseas countries

Many countries, such as the European Union, the United States and Canada, have HACCP-based regulatory measures in place for poultry products.
Other considerations

Quarantine restrictions apply to products under this commodity classification and include specific time and temperature requirements depending on country disease status. Refer to the ICON database.

This risk statement was compiled by FSANZ in: August 2014

References


