Salmonella risk profile of UK-produced hen shell eggs: Statement of purpose

1.1 Background

1.1.1 Previous risk assessment

Historically, FSA advice has been for at risk or vulnerable groups to avoid the consumption of raw or LTTC (for example, runny) eggs. This advice was due to high levels of human infection with *Salmonella* Enteritidis and was reported on by the Advisory Committee on the Microbiological Safety of Food (ACMSF) in 1993 and 2001 (ACMSF, 1993 and ACMSF, 2001). Decreases in the number of cases and outbreaks of *Salmonella* Enteritidis triggered the FSA to commission a risk assessment of the microbiological safety of eggs in the UK. This was completed in 2016, and concluded that there had been a significant reduction in the risk from *Salmonella* in UK-produced hen shell eggs, in particular eggs produced under the Lion Code (or equivalent) egg assurance scheme (ACMSF, 2016). Therefore, the risk to consumers from eggs produced under these schemes was assigned a risk level of 'very low' (very rare but cannot be excluded), with 'low' uncertainty (there are solid and complete data available; strong evidence is provided in multiple references; authors report similar conclusions), whilst the risk from shell eggs not produced under these schemes was considered 'low' (rare, but does occur) risk. In addition, the ACMSF concluded that for eggs produced under the Lion Code (or a demonstrably equivalent) egg assurance scheme, it would be possible to serve raw or lightly cooked eggs to individuals who may be more vulnerable to infection, including pregnant women, infants, young children, and elderly people.

Due to this change in the risk level of eggs, in 2017 the FSA and FSS updated their consumer advice on the consumption of eggs. In addition, they issued communications targeting consumers, and worked with specialist poultry vets to produce a matrix with criteria that egg assurance schemes would need to meet to be considered 'very low' risk for *Salmonella*. The purpose of the matrix is to enable independent assessment of industry schemes. The first scheme to fulfil these criteria was Laid in Britain, and the guidance was amended in July 2021 to reflect this (Food Standards Agency, 2022).

Detections of *Salmonella* on laying hen farms started to increase in 2017, and the use of whole genome sequencing (WGS) has increased the sensitivity and specificity of case ascertainment in outbreak investigations and confidence in source attribution. There have been several persistent outbreaks of *Salmonella* linked to exposure to UK produced eggs since 2017, as well as several large persistent outbreaks linked to imported eggs since 2015. Given these emerging concerns, this risk profile will examine the current situation of *Salmonella* in UK-produced table eggs, describing and defining the factors that may influence the current risk of *Salmonella* in UK-produced eggs and highlight any factors that have changed since the risk assessment provided by the ACMSF in 2016. This will be used to assess whether the assumptions underpinning the ACMSF risk assessment remain appropriate and consider whether an updated risk assessment is necessary.

1.1.2 Summary of policy

The Retained Regulation EC No. 2160/2003, which came into force on 21st December 2003, intends to limit the occurrence of certain zoonotic infections at the primary production level by implementing species-specific *Salmonella* National Control Programs (NCPs). The NCP for commercial laying flocks of chickens implements the monitoring and controls that are required in order to meet the target for reduction in *Salmonella* prevalence that has been set in Retained Regulation (EU) No. 517/2011 (amended in 2019 by Retained Regulation (EU) 2019/268). The goal is for no more than 2% of adult laying hen flocks to test positive for regulated *Salmonella* serovars each year. S. Enteritidis and S. Typhimurium, including monophasic strains of S. Typhimurium, are the controlled serovars. All commercial egg producing flocks with 350 or more birds are included in the *Salmonella* in Laying Flocks NCP. Separate laws enforce the NCP, each country has their equivalent Control of *Salmonella* in Poultry Orders (CSPO): in England The Control of *Salmonella* in Poultry Order 2007 (legislation.gov.uk), Scotland The Control of *Salmonella* in Poultry (Scotland) Order 2008 (legislation.gov.uk) and Wales The Control of *Salmonella* in Poultry (Wales) Order 2008 (legislation.gov.uk). The EC reduction objective only applies to controlled serovars in adult laying flocks, unless a flock is linked to a human foodborne disease outbreak (Retained Regulation (EC) No. 1237/2007, amending Retained Regulation (EC) No. 2160/2003). The CSPO establishes sampling and recording criteria for both in-rear and adult flocks, and APHA keeps track of the outcomes of testing in both age groups (APHA, 2021).

The legislation stated above together with Regulation (EC) No 852/2004, and the support of the NCP programme, aims to reduce the risk to consumers when eating raw or less-than-thoroughly cooked eggs. Due to the contamination being monitored through the sampling and control programmes, risk management actions can be taken to protect consumers.

1.2 Question to be addressed

This report reviews the recently available evidence concerning *Salmonella* associated with UK-produced hen eggs (including food made using raw/lightly cooked UK hen eggs, not further sufficiently heat treated, for example, mayonnaise, sauces, desserts) to determine whether there is a need to review the ACMSF risk assessment published in 2016 (ACMSF, 2016).

1.3 In scope

Data and consideration in scope of this risk profile include:

- all consumers, including vulnerable consumers: infants, children, pregnant women, and elderly people as defined in the ACMSF report (2016).
- consumer's behaviours and consumption patterns.
- UK laying flocks.
- UK hen shell eggs.
- Food made using raw/lightly cooked UK hen eggs, not further sufficiently heat-treated for example, mayonnaise, sauces, desserts.
- Risk associated with using eggs and inappropriate handling and/or hygiene at all parts of the commercial egg production and supply chain including risks arising from cross contamination:
    - feed
    - farms
    - transporting
    - packing centres
    - caterer or other food businesses preparing food using raw/lightly cooked UK hen eggs not further sufficiently heat treated for example, mayonnaise, sauces, desserts

    - retail
- trends in UK egg supply.
- identifying changes in UK industry practices, their impact on risks associated with *Salmonella* in eggs and actions taken by assurance schemes to mitigate those risks.
- data on isolations, incidents and outbreaks associated with UK eggs and outcomes of investigations into those outbreaks.
- information from EU and other countries where this informs the risk profile and the impact of practices/developments in the UK.

1.4 Out of scope

Data and considerations out of scope of this risk profile include:

- excluded consumers: severely immunocompromised individuals such as those undergoing transplant surgery etc. who will shave a highly specialised and restricted diet that will not include foods such as eggs.
- non-*Salmonella* related risks (including all other pathogens and antimicrobial resistance).
- eggs of other species (meaning non-chicken).
- non-UK eggs.
- non raw/lightly cooked egg and eggs products, meaning food that is sufficiently cooked (inclusive of powdered or pasteurised egg).
- risks arising from processing, catering, domestic practice, or behaviour as follows:
- sources other than the egg itself (for example, contamination of a mayonnaise by *Salmonella* originating from pork meat used at a caterer)
- risk of insufficient heat treatment of a product that was originally intended to be sufficiently cooked (for example, pasteurised eggs where the pasteurisation failed).

As this is a risk profile only, no assessment of the risk, or change in risk levels or uncertainty since the ACMSF risk assessment (ACMSF, 2016), will be undertaken.