

**FOOD STANDARDS AGENCY CONSULTATION ON THE ADVISORY
COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD'S DRAFT
REPORT ON INCREASED INCIDENCE OF LISTERIOSIS IN THE UK**

EVIDENCE SUBMITTED BY THE SOCIETY FOR GENERAL MICROBIOLOGY (SGM)

Introduction

The Society for General Microbiology, founded in 1945, is an independent professional scientific body dedicated to promoting the 'art and science' of microbiology. It has now established itself as one of the two major societies in the world in its field, with some 5,000 members in the UK and abroad.

General Comments

This report provides a good summary of the current understanding of the factors relevant to the food-borne transmission of *Listeria*. It outlines and investigates four main hypotheses to explain the recent increase in incidence of listeriosis and the reported change in clinical symptoms of many of these recent cases. The first of these is that the increase is not real, but is due to a change in either reporting or diagnostic procedures. There is good evidence presented that this increase is not due to these and therefore the reported increase represents a real public health concern. The three remaining hypotheses presented are that (2) there has been a change in the virulence of the bacterium, (3) a change in the susceptibility of the host or (4) there has been a change in levels of exposure. Each of these is considered in Specific Comments.

Specific Comments

Hypothesis (2)

Data from typing of organisms does not support the idea that there has been a spread of a new, more infectious clone of this bacterium. The data presented clearly do not support hypothesis (a) and therefore the conclusion on p32 that "...there is no *in vitro* evidence to support this hypothesis." is sound. However, despite this statement, a key recommendation is made in the following paragraph (section 4.35) that "Work is needed to develop *in vitro* methods of investigating the frequency of specific genes or gene polymorphisms associated with differences in the pathogenicity of *L. monocytogenes*." It is not clear why this is a key recommendation when there is no evidence to suggest that being able to determine such differences would help to understand the current increase in cases of the disease.

Hypothesis (3)

Many factors in long term treatment of the elderly are considered, but it is clear that no specific risk factor has yet been identified. However the paucity of data pertaining specifically to patients diagnosed with listeriosis suggests that it is premature to draw any conclusions here. Hence the recommendations made in sections 4.27 and 4.28 that further studies should be undertaken to investigate the contribution (if any) of treatments to the risk of developing listeriosis and for a retrospective case-controlled study are both sensible and achievable recommendations.

Hypothesis (4)

The data presented here support the fact that there has been no significant increase in exposure of the public to *Listeria*. A small note here, the data in Table 7 that are reported as being available in autumn 2008 should be included, if possible, before the final report is published. The data presented focus on surveys of foods known to be associated with food-borne transmission of *Listeria*, and therefore is it possible that a food not previously associated with transmission of *Listeria* is responsible for the increase in exposure?

It is clear from the data presented that the standard of hygiene maintained by the majority of food producers is high but, inevitably for this ubiquitous organism, *Listeria* is still found associated with a low percentage of high risk food products. Many of these include minimally processed foods such as cut, washed salads and fruit. It is possible that an increase in the volume of these foods consumed, rather than an increase in the contamination rate, is responsible for an increased exposure of the at risk population?

Consumer Advice

The recommendations following the consideration of hypothesis 4 can all be supported. It is hoped that, even if the reason for the increase in listeriosis cases in the over 60 group cannot be identified, a targeted information campaign to raise awareness of high risk foods in this group could be very effective in reducing case numbers. This strategy has proved very successful in reducing overall numbers of pregnancy-associated cases following the introduction of advice targeted to this group.

Perspective

In section 4.9 of the report it is stated that “However, even if significant under-reporting of listeriosis has previously occurred, the FSA has recently estimated that *L. monocytogenes* is responsible for the highest numbers of deaths from a food-borne pathogen (FSA 2007, *Annual report of the Chief Scientist 2006/7*). This statement comes four years after the 2005 MSFFG *Listeria* report (see FSA web site¹) which concluded the following: “9.1 The quantity of research on *L. monocytogenes* is, relative to the effort applied to *E. coli* and *C. jejuni*, very low. This undoubtedly reflects the lesser importance of the organism in relation to public health priorities” and “9.2 For the MSFFG, the issue is essentially whether this situation is appropriate or whether the risk of *L. monocytogenes* becoming a more serious public health concern (as has *E. coli* O157) means that there should be additional research effort in this area.” It is clear now that *Listeria* has become a more serious public health threat and the FSA should use the findings of this report to inform other UK research funding agencies of the need to prioritise such research. Interestingly the areas identified by the MSFFG report “where research would be valuable” were:

- the frequency of occurrence and quantification of *Listeria* spp. and *L. monocytogenes* in the food chain
- techniques for sampling, diagnosing and differentiating between *Listeria* species and strains, including rapid detection methods

- some further work on the physiology of the organism, including its properties which enable growth at refrigeration temperatures and its involvement in mixed biofilms
- the virulence and pathogenicity of *L. monocytogenes*. Within this area, there would be benefit in research to improve the prognosis of human listeriosis, including the reduction of sequelae. Particular subjects for all aspects of this research would include pregnant women, the very young and other vulnerable groups.
- consumer practice in the home with respect to food handling and hygiene and other relevant practices.

It is clear that exactly the same issues have been identified in this report. It would be unfortunate if the same conclusions were to be reached in another four years if the problem is not prioritized by UK funding agencies.

References

1. *UK Publicly Funded Research Relating to Listeria monocytogenes: Report to the Microbiological Safety of Food Funders Group May 2005.*
<http://www.food.gov.uk/science/research/researchinfo/foodborneillness/microfunders/listeria>

Sources

This evidence has been prepared on behalf of SGM by Dr Cath Rees, University of Nottingham.

About the SGM

Society membership is largely from universities, research institutions, health and veterinary services, government bodies and industry. The Society has a strong international following, with 25% of membership coming from outside the UK from some 60 countries.

The Society is a 'broad church'; its members are active in a wide range of aspects of microbiology, including medical and veterinary fields, environmental, agricultural and plant microbiology, food, water and industrial microbiology. Many members have specialized expertise in fields allied to microbiology, including biochemistry, molecular biology and genetics. The Society's membership includes distinguished, internationally-recognised experts in almost all fields of microbiology.

Among its activities the Society publishes four high quality, widely-read research journals (*Microbiology*, *Journal of Medical Microbiology*, *Journal of General Virology* and *International Journal of Systematic and Evolutionary Microbiology*). It also publishes a highly respected quarterly magazine, *Microbiology Today*, of considerable general educational value. Each year the Society holds two major scientific meetings attended by up to 1500 microbiologists and covering a wide range of aspects of microbiology and virology research.

The governing Council of the SGM has a strong commitment to improving awareness of the critically important role of microbiology in many aspects of human health, wealth and welfare. It has in this connection recently initiated a 'Microbiology Awareness Campaign' aimed at providing information to the government, decision makers, education authorities, media and the public of the major contribution of microbiology to society.

An issue of major concern to the Society is the national shortage of experienced microbiologists, particularly in the field of clinical microbiology and in industry. To attempt to improve this situation long-term, the Society runs an active educational programme focused on encouraging the teaching of microbiology in university and college courses and in the school curriculum, including primary schools. Some 570 schools are corporate members of SGM.

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