

**ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD**

**DISCUSSION PAPER**

**UPDATE ON THE MICROBIOLOGICAL STATUS OF READY-TO-EAT  
FOODS (FOCUSSING ON FRUIT AND VEGETABLES)**

At its March 2008 meeting ACMSF considered the microbiological safety of ready-to-eat bagged salads. At this meeting ACMSF requested an update from the Health Protection Agency (HPA) on the microbiological status of ready to eat foods. The Committee previously considered HPA data on the microbiological safety and status of ready-to-eat fruit and vegetables in 2005.

The attached paper together with ACM 922a provides an update on foodborne infectious intestinal diseases associated with the consumption of ready-to-eat foods, focussing on fruit and vegetables.

Also attached are papers providing the detailed analyses and supplementary information (ACM 922b to e). Please note that papers ACM 922b to d are published or accepted journal papers and as such may be referenced but not published on websites.

Members are invited to comment on this paper.

**Secretariat  
September 2008**

## **ADVISORY COMMITTEE OF THE MICROBIOLOGICAL SAFETY OF FOOD**

### **UPDATE ON THE MICROBIOLOGICAL STATUS OF READY-TO-EAT FOODS (FOCUSSING ON FRUIT AND VEGETABLES), SEPTEMBER 2008**

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#### **Introduction**

1. The ACMSF has previously requested updates on the microbiological safety and status of ready-to-eat fruit and vegetables in the UK. This report further provides an update on foodborne infectious intestinal diseases (IID) associated with the consumption of ready-to-eat foods, focussing on fruit and vegetables.

#### **Ready-to-eat fruit and vegetables**

2. A review on general outbreaks of foodborne infectious intestinal diseases (IID) associated with the consumption of prepared salads (salad vegetables, salad meals, fruit) in England and Wales, 1992–2006 has been recently published by the Health Protection Agency (Little and Gillespie, 2008). This review also provides an assessment of the microbiological safety of ready-to-eat salad vegetables and fruits sampled as part of the Local Authorities Co-ordinators of Regulatory Services (LACORS)/HPA food studies programmes from 1995 to 2007.
3. This review paper notes that in recent years the importance of prepared salads as potential vehicles of gastrointestinal infection has been highlighted by several large outbreaks both nationally and across international boundaries. Between 1992 and 2006, 2,274 foodborne general outbreaks of infectious intestinal disease were reported in England and Wales, of which 4% were associated with the consumption of

prepared salads. In total, 3,434 people were affected, with 66 hospitalizations and one death reported. The attribution of prepared salad types and pathogens among prepared salad associated outbreaks are presented and discussed. Findings from UK studies on salad vegetables, fruit and mixed salads from 1995 to 2007 (21,247 samples) indicate that most bacteria of concern with regard to human health are relatively rare in these products (98.6% of satisfactory microbiological quality); however, outbreaks of salmonellosis were uncovered associated with bagged salad leaves and fresh herbs during two such studies. Although it is known that fresh salad vegetables, herbs or fruit may become contaminated from environmental sources, only in recent years has the association of foods of nonanimal origin, such as salad vegetables, with foodborne illness become evident and recurrent, demonstrating that major health problems can arise from consumption of contaminated prepared salads if hygiene practices breakdown.

4. Supplementing the information provided in the review paper, in 2007, there was one foodborne IID reported to the HPA that was associated with the consumption of fresh produce (Table 1). A comprehensive account of this outbreak of *Salmonella* Senftenberg infection linked to contamination of pre-packed basil has been published (Pezzoli et al., 2008).

#### **Human listeriosis linked to hospital sandwiches**

5. In England and Wales there have been six recent incidents/outbreaks of *Listeria monocytogenes* infection associated with sandwiches purchased from or provided in hospitals (HPA, 2008). These recent incidents/outbreaks highlight the potential for sandwiches contaminated with *L. monocytogenes* to cause severe infection in vulnerable people.
6. Sandwiches are widely consumed by patients in hospitals. The LACORS/HPA study in 2005 to 2006 demonstrated that sandwiches served in hospitals can be contaminated with low levels of this pathogen on a relatively frequent basis (Little et al., 2008). In this study, the

presence of *Listeria* spp. and *L. monocytogenes* was more often associated with sandwiches that were supplied to hospitals rather than those made on-site. The study also highlighted the absence of a hazard analysis system, the collection of sandwiches from sites other than the hospital kitchen (e.g. wards, cafeterias or shops) and the storage/display of sandwiches above 8°C as factors associated with the presence of *Listeria* spp. and *L. monocytogenes*.

7. All foods consumed by hospital patients should be free from potential pathogens, including *L. monocytogenes*, and those responsible for procuring sandwiches for hospitals should ensure the safety of vulnerable patients in their care.

## References

- Health Protection Agency (HPA) (2008). Human listeriosis linked to hospital sandwiches: implications for procurement and storage. Health Protection Report Vol 2 No. 35, 29 August 2008. Available at: <http://www.hpa.org.uk/hpr/archives/2008/news3508.htm#listeria>.
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- Little, C.L., Gillespie, I.A. (2008). Prepared salads and public health. *Journal of Applied Microbiology*: Published article online: 4 Apr 2008 doi: 10.1111/j.1365-2672.2008.03801.x
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**Table 1 Foodborne general outbreaks of infectious intestinal diseases associated with salad, vegetables and fruit**  
**England and Wales - 2007**

<b>Place</b>	<b>Organism</b>	<b>No. Affected</b>	<b>No. Positive</b>	<b>Month of outbreak</b>	<b>Suspect vehicle</b>
National	<i>Salmonella</i> Senftenberg	30	30	May	Basil

Source: GSURV outbreak database.

NB: The database is dynamic and, as such, data are subject to change