
INTRODUCTION TO THIS ISSUE

Food poisoning from raw fruit and vegetables

An apple a day is said to keep doctors at bay – no longer it seems. Raw fruits and vegetables are still good for you but may also send you to the doctor. In this issue we have collected together a series of papers on food poisoning related directly or indirectly to raw fruit and vegetables.

A variety of organisms has been responsible. Raw baby corn from one source caused outbreaks of *Shigella sonnei* in two widely separated countries, Australia and Denmark (Lewis *et al.* pp. 326–334). This suggests that outbreaks elsewhere may have gone unnoticed. One caterer provided raw carrots, again contaminated with *S. sonnei*, in meals for passengers on 12 airline flights which served 22 USA states, Japan, Australia and American Samoa. Diarrhoea affected an estimated 300–1500 passengers in all, including more than half the passengers on at least one of these flights (Gaynor *et al.* pp. 335–341).

Raw carrots, said to be of ‘poor quality’, caused another outbreak, this time in Finland. The offending organism, *Yersinia pseudotuberculosis*, appears to be a common source of food poisoning from fresh produce in that country (Rimhanen-Finne *et al.* pp. 342–347). Raw carrots yet again caused an outbreak, this time of *Cryptosporidium hominis* infection, although on this occasion they were probably contaminated by a carrier who dipped his hands into the water containing the carrots (and peppers) (Ethelberg *et al.* pp. 348–356).

Transforming mung beans into bean sprouts can be hazardous: to my knowledge the first outbreak published was in 1990 [1]. Mohle-Boetani *et al.* (pp. 357–366) report another *Salmonella* outbreak here, and review six similar outbreaks between 2000 and 2002. Cantaloupe melons (also known as rockmelons) caused a *Salmonella* outbreak in two states and one territory in Australia (Munnoch *et al.* pp. 367–374).

Escherichia coli O157 infection was associated with lemon-and-coriander chicken wraps which had been

widely distributed throughout most of England and Wales; the precise ingredient in the chicken wrap that caused the infection could not be determined, but those unique to the wrap included frozen milled lime leaf, green peppers, coconut milk, and green Thai mayonnaise (Whittaker *et al.* pp. 375–382). Apple juice is known to be associated with *E. coli* O157 outbreaks, and was considered as a possible, though unproven cause of another outbreak reported here (Alpers *et al.* pp. 389–395). *Salmonella* and *E. coli* together caused an outbreak probably attributed to fresh imported basil (Pakalniskiene *et al.* pp. 396–401), now unfortunately well-known to be a source of food poisoning. Mixed raw vegetables were implicated in a norovirus outbreak (Makary *et al.* pp. 402–407).

To remind us that there are other causes of food poisoning, several papers in this issue also describe gastroenteritis from chicken, eggs, water, and raw seafood. Water caused an outbreak of hepatitis A. (Another outbreak of hepatitis from water, hepatitis E this time, was described in a previous issue [2].) A prolonged outbreak of salmonellosis was attributed to one or more carrier food handlers in Texas. In a review of foodborne outbreaks caused by norovirus in Belgium, a food handler was considered to be responsible for nearly half the cases, and 10% of their outbreaks were attributed to another raw fruit – raspberries. To further remind us that not all gastroenteritis is foodborne, the last paper describes case-to-case transmission of this extremely contagious organism, norovirus, on board an airline flight. About one-third of all those studied were affected.

To obtain raw fruit and vegetables out of season, as many countries now do, they are transported many thousands of miles from growing areas, and outbreaks can thus affect many widely dispersed countries simultaneously. Some outbreaks undoubtedly

are unrecognized, and the scale of the problem is unknown. Three experts on food hygiene have provided a thoughtful and informative review paper on food poisoning from fresh produce (Lynch *et al.* pp. 307–315), and make some useful recommendations on how to avoid it. *Epidemiology and Infection* is grateful to them, as to the authors of all papers in this issue, for their contributions.

Maybe a banana a day would be better for you ... provided you peel it yourself first of course.

REFERENCES

1. **O'Mahony M, *et al.*** An outbreak of *Salmonella saint-paul* infection associated with bean sprouts. *Epidemiology and Infection* 1990; **104**: 229–235.
2. **Sailaya B, *et al.*** Outbreak of waterborne hepatitis E in Hyderabad, India, 2005. *Epidemiology and Infection* 2009; **137**: 234–240.

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