



## Microbiology bulletin 20

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### The benefits (and risks) of high altitude cooking

Nestlé scientists have discovered that cooking food at high altitude, where pressure is lower, can make it more intense in flavour, colour and aroma, as well as potentially improve the nutritional quality of the food.

Scientists from the Nestlé Research Centre (NRC) in Lausanne, Switzerland, travelled to the world's highest revolving restaurant, the Three Sixty in Saas-Fee, Switzerland (3,600 metres above sea level) for a day's cooking at high altitude. Back in the lab (833 metres above sea level), they repeated the cooking process and compared the results. Their conclusion – food cooked at high altitude both looks and tastes better.

The research is part of Nestlé's exploration of how it can provide healthier, more pleasurable foods using natural processes without using artificial additives and enhancers. The results of the research have just been published in the Journal of Agricultural and Food Chemistry.

The lower boiling point of water at high altitude and low pressure allows food to cook more gently, at a lower temperature. At 3,600m, for example, water boils at just 85°C. Nestlé scientists have proved that this process maintains the food's natural amino acids, carbohydrates and organic acids, as well as volatile compounds which are responsible for aromas.

Having these elements preserved in the components of a finished dish makes the flavours, colours and aromas more intense.

As microbiologists, we utilise the relationship between boiling point and pressure by increasing the pressure to achieve a raised boiling point (which is the principle behind autoclaving media for sterility, as bacterial spores can survive boiling at normal atmospheric pressures). And also as microbiologists, perhaps we should be a little wary of low pressure thermal processes which ultimately will impart less heat to a product, which may be good for flavour and destroy fewer vitamins and minerals, but potentially will kill fewer bacteria too.

### FSA publish latest Campylobacter survey interim report covering Quarters 1-3

The latest quarterly updates on the FSA's yearlong Campylobacter survey have been published. The results are presented cumulatively over the 9 months of the survey so far (mid Feb – mid-Nov 14), and the running totals after 9 months show little variance with the data collected after 6 months.

19% of chickens tested positive for Campylobacter at levels greater than 1,000cfu/g.

73% of chickens tested positive for the presence of Campylobacter.

7% of the packaging tested positive for the presence of Campylobacter.

The survey acknowledges that the recent interventions that retailers and processors have introduced such as rapid surface chilling, sonic steam treatments and improvements in packaging may not be reflected in these results.

### **Salmonella outbreak linked to Cucumbers**

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They were falsely blamed for the 2011 E coli 0104 outbreak, but an outbreak of *Salmonella newport* which affected 275 people last year in America has been linked to the consumption of cucumbers.

### **Allergy risks associated with potential food fraud**

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The discovery of almonds in three products not advertised as containing nuts has prompted a wider investigation by the Food Standards Agency which may prove to be the tip of the iceberg, as food fraud and adulteration has once again hit the headlines.

Almonds were found in fajita and enchilada kits from Morrisons, Sainsburys and Aldi, and in Bart's ground cumin. All the items have been recalled.

Investigations indicated that a spice mix supplied by Santa Maria UK Ltd used in these products contained undeclared almond protein. Subsequent industry testing revealed that the paprika in the spice mix was the most likely source. Further investigations into the supply chain of paprika are continuing.

The FSA initiated a sampling programme, testing for almond and peanut protein, after certain products containing ground cumin tested positive for undeclared peanut protein in the United States and Canada.

A spokeswoman for the FSA said that there was no evidence of food fraud at this stage but the Food Crime Unit will become involved if any evidence of a crime emerges.

The Food Crime Unit was set up in the wake of the horsemeat scandal to crack down on fraudulent food entering the supply chain.

There is currently a severe worldwide shortage of cumin, after crops in the major harvest region of Gujarat in India failed. The authorities are understandably worried that when food commodities are in short supply there may be a temptation to bulk up the supply with other products.

The new version of the BRC standard (version 7) has a completely new section on product authenticity, claims and chain of custody, which ensures that food manufacturers have systems in place to minimise the risk of purchasing fraudulent or adulterated food raw materials and to ensure that all product descriptions and claims are legal, accurate and verified.

There would be an obvious allergy risk if undeclared nut material found its way into foodstuffs.

### **Melon seeds involved in Salmonella recall**

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As we have discussed many times already, there are no limits to the arid and inhospitable food matrices in which *Salmonella* can survive. Further evidence this month is provided by Wanis Ltd which has recalled Africa's Finest Ground Egusi (Melon Seeds) because *Salmonella* has been detected in the product. *Salmonella* can survive on the surface of melons, but will only grow if introduced into the fleshy part of the melon (usually when the melon is sliced). The problem is accentuated in melons with a rough outer skin such as cantaloupes, as bacteria on the rough surface are more likely to evade surface sanitisation prior to cutting. The method of drying the seeds may also lead to the introduction of *Salmonella*.

### **Listeriosis in England & Wales: summary report**

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Public Health England have published a summary report on Listeriosis. They report that in the last decade, an average of 180 cases were reported annually, which is a 23% increase on the previous decade. The presence of an underlying condition which causes the patient to be immunocompromised is generally regarded to be a significant factor in the development of the illness and the report states that malignancy was the most common underlying condition, followed by autoimmune diseases such as Chron's disease and arthritis.

The clinical presentation of 79% of cases was bacteraemia, and 15% of cases presented with meningitis. In previous years bacteraemia has been the predominant clinical presentation in patients 60 years and above, and this trend has continued.