



Microbiology bulletin 8

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Smart food packaging

Innovations in food packaging and smart labelling have been discussed in the House of Lords recently.

At a committee hearing examining how to reduce food waste, peers were told that new research is examining the feasibility of incorporating a small micro-chip into food packaging which would measure that actual deterioration rate of the food. Current best before dates assume that all food is stored at the same temperature, so this innovation would measure the production of metabolites and gasses by spoilage bacteria in their actual storage conditions.

Committee chair Lib Dem Baroness Scott was told that the computer chip could even send you a text to tell you which food in your fridge requires eating.

Other ideas include smart labels which will change colour over time to show how long a packet of food has been open. A Scottish firm Insignia Technologies has recently received private investment to help commercialise its “smart pigment” technology. Insignia will initially target the food production and processing sector but have plans to expand into other areas including healthcare, cosmetics and pharmaceuticals.

Scottish Hydro *E coli* 0157 outbreak - update

The number of people affected by the *E coli* 0157 outbreak mentioned in last month’s bulletin has risen to 21.

All patients are either fully recovered or are recovering at home. Investigators identified three days between January 17 and 19 as the likely infection period. The health board said it is unlikely that more people will develop symptoms as the incubation period has now passed

VTEC *E coli* 0157 - bagged watercress - update

The HPA have issued an update to the Vero Toxin *E coli* 0157 outbreak associated with bagged watercress mentioned in the October bulletin. All 19 people who had symptoms revealed a link to the consumption of pre-packaged watercress purchased from a particular supermarket chain. This led to the prompt voluntary withdrawal and recall of watercress products by the retailer. Further investigations uncovered a second, smaller outbreak also associated with consumption of watercress. Environmental investigations revealed that a field containing cattle was sited close to one of the farms supplying the watercress. It seems likely that the cause of this second outbreak was transfer of VTEC from the

field to the watercress bed, either from wildlife entering the watercress farm or run-off water.

This illustrates how easily fresh produce and ready to eat salad crops can become contaminated by potentially pathogenic enteric bacteria; a process which may have been exacerbated by the recent high rainfalls and flooding.

Salmonella and kissing pet lizards

NHS Forth Valley has warned owners to avoid kissing bearded dragons, as most reptiles can carry Salmonella in their gut without showing any signs of infection.

The bacteria are then shed in droppings, which can quickly spread over the skin of pet lizards and other reptiles.

As a result, any surface or object that the animal comes into contact with can be contaminated.

NHS Forth Valley said that four people have been brought into hospital in the last eight months suffering from the illness after kissing bearded dragons and other reptiles.

NHS consultant in public health medicine, Dr Henry Prempeh said: "While salmonella is not usually life threatening in healthy individuals, immuno-compromised people, the very young and the very old can have complications associated with this infection.

Ulcerative colitis and Crohn's disease

Manchester United footballer Darren Fletcher joined former England rugby captain Lewis Moody last month to launch an appeal in aid of the charity Crohn's and Colitis UK.

Both Moody and Fletcher have battled ulcerative colitis; Moody was diagnosed in 2005, but kept his condition secret while continuing to play top-

level rugby, whereas Fletcher has only recently returned to the Manchester United team after a year out following surgery to help control his disease.

New research is focusing on what could trigger the disease in individuals and on the role of bacteria in the gut.

At present, scientists think that both Crohn's and colitis are caused by a combination of factors including the genes we are born with, how our digestive systems react to bacteria in the intestine and a set of unknown triggers which could include viruses, stress and diet.

People with underlying intestinal disorders are more likely to succumb to food poisoning bacteria and food borne illnesses as the integrity and proper functioning of their intestines becomes compromised.

And talking of gut bacteria...their role in asthma

A team at the University of Lausanne in Switzerland showed that the high and low fibre diets altered the types of bacteria living in the guts of the mice. Bacteria which utilise the soluble fibre found in fruit and vegetables, flourished on the high-fibre diet and they in turn produced more short-chain fatty acids which are absorbed into the blood. The scientists said these fatty acids acted as signals to the immune system and resulted in the lungs being more resistant to irritation.

The opposite happened in low-fibre diets and the mice became more vulnerable to asthma.

Their report argued that a dietary shift away from fibre in favour of processed foods may be involved in rising levels of asthma in western societies.