



## Microbiology bulletin 35

August 2016

### We can all safely eat runny eggs again?

A report published on the 25<sup>th</sup> July by the Advisory Committee on the Microbiological Safety of Food (ACMSF) into egg safety has shown a major reduction in the risk from Salmonella in UK eggs. Responding to the report the Food Standards Agency (FSA) has launched an eight week consultation reviewing the advice given to consumers on eating lightly cooked or raw eggs.

The FSA sought the advice of the ACMSF as to whether the risk to consumers, including vulnerable groups such as, pregnant women, the young, and the elderly, from eating lightly cooked or raw shell eggs has changed since 2001, when the Committee last reviewed the subject of salmonella in eggs.

Professor John Coia, Chair of the ACMSF Expert Ad Hoc group on eggs said, 'The committee has found that there has been a major reduction in the risk from Salmonella in UK hens' eggs since 2001. This is especially the case for eggs produced under the Lion Code, or equivalent schemes. It also recommended that these eggs could be served raw or lightly cooked to both those in good health and those in more vulnerable groups.'

Following Committee approval and a UK wide consultation of the report, the FSA has agreed to examine its advice taking into account the Committee's conclusions and recommendations. At present, the FSA's advice to consumers is that eating raw eggs, eggs with runny yolks or any food that is uncooked or only lightly cooked and contains raw eggs, may cause food poisoning and warns vulnerable groups against eating them.

The consultation is inviting views on the recommended changes to the FSA's advice from a range of stakeholders,

including food and hospitality industries, consumer and enforcement bodies, and health care practitioners.

When the Health Minister Edwina Currie announced during a television interview in 1988 that "Most of the egg production in this country is now affected with salmonella," she sparked many years of debate, and ultimately wide ranging changes to the industry. One such change has been the vaccination of all egg laying flocks in the UK against *Salmonella enteritidis*, which allied to changes to industry practices, has been directly responsible in the reduction of cases of illness associated with this particular serotype.

### Update on UK 0157 outbreaks

As of 28 July, Public Health England (PHE) is continuing to investigate the outbreak of E. coli O157 mentioned in last month's bulletin

PHE now confirms there have been no further cases identified since the previous update on 21 July. The number of cases remains at 161 (England 154, Wales 6 and Scotland 1), with 2 fatalities.

Samples from affected individuals have been confirmed as STEC serogroup 0157 phage type 34. Whole gene sequencing of the isolates has indicated that the strain may be an imported one, possibly from the Mediterranean area.

The strain is not related to those currently found in livestock in the UK, but is closely related to sequences identified in people reporting recent travel to the Mediterranean region, however the strain has not been reported outside the UK.

In a separate outbreak currently being investigated by the Health Protection Agency of Scotland (HPS), 16 people

are ill with E coli 0157. It is claimed that 7 of the affected people all consumed unpasteurised blue cheese.

### **STEC outbreak in the US linked to flour**

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It seems that even products which would normally undergo a thermal process which would be expected to kill E coli can still be implicated in large outbreaks due in part to cross contamination of the raw product or customer practices of tasting the product in its raw state.

In a current multistate outbreak in the US, 46 people have been infected with strains of STEC O121 and STEC O26. Epidemiological evidence has linked the illnesses to consumption of flour produced at the General Mills flour processing facility in Kansas City,

The Centre for Disease Control (CDC) has warned that consumers should bake all items made with raw dough or batter before eating them and not to taste raw dough or batter. Restaurants and retailers should not serve raw dough to customers or allow children and other guests to play with raw dough

### **UV technology applications to fresh produce wash**

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There are many existing and established applications of UV light technology in the food industry such as air and water treatment, and decontamination of food surfaces and equipment. Product treatment is normally carried out by the use of large pieces of equipment such as UV tunnels or large rotating drums. However a potential domestic application of this technology has been developed by scientists at Delaware University.

They have developed a UV light oven, which is about the size of a microwave oven, which combines UV light with water.

One of the main disadvantages of using UV light to sterilize fresh produce is that UV light has relatively low penetration so it only achieves surface decontamination and there is the potential for shadowing on the complex surfaces which are typically found in fresh produce. UV light can however penetrate through clean water, so by combining a wash cycle with a UV step, the water will wash off the pathogens from a food surface and once they get into the water, they will be killed almost immediately. The effect of soiling on the UV penetration in the water was not discussed.

The researchers claim that decontamination by this method is significantly more effective in removing surface

bacteria from the surface of fresh produce than by washing alone.

### **Inhibition of bacterial toxins**

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*Clostridium difficile* is the organism which is responsible for many of the hospital based infections known as Antibiotic Associated Diarrhoea. As the normal intestinal flora is affected by the use of broad spectrum antibiotics, the resistant organisms (free from the competitive inhibitory actions of the other bacteria) thrive, and in the case of *Cl difficile* produce toxins which damage the intestinal epithelial cells resulting in severe diarrhoea.

As these organisms are obviously resistant to most of the conventional antibiotic therapies, researchers have been looking into the possibility of not killing the organism, but of making the toxins less effective, and therefore eliminate the symptoms caused by the subsequent tissue damage and necrosis.

New research has generated a molecule, based on recombinant antibody technology which blocks exotoxin uptake. Rather than treat *Cl. difficile* infection with an entire antibody, which has been successful but is quite expensive, the team generated a molecule which is the variable region of the immunoglobulin antibody. This small fragment can be expressed from *E. coli*, decreasing cost and increasing yield. Because the molecule is based on a toxin-recognizing antibody, it can potentially neutralize the devastating effects of the *Cl difficile* toxins.

### **Polymer coatings which reduce the potential of biofilms**

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We have discussed the problems of biofilm build up in previous bulletins, but researchers at Cornell University have developed a range of new polymer coatings which can be applied to food processing surfaces that prevent bacterial adhesion and inhibit the growth of any organisms which are able to adhere to the surfaces.

In the food industry many food contact surfaces have to withstand acidic and caustic cleaning materials, extremes of temperature and physical abrasion, which often result in uneven surfaces in which bacterial colonisation can occur. It is claimed that the

smooth polymer surfaces are robust and will retain their antimicrobial properties.