

Disease-causing *Escherichia coli*: 'I will survive'

9 September 2009

Strains of *Escherichia coli* bacteria that cause food poisoning have been shown to have marked differences in the numbers of genes they carry compared to laboratory strains of *E. coli*. Some of these genes may enable them to survive stresses such as those caused by modern food processing techniques or exploit food sources that laboratory *E. coli* strains cannot use.

Dr Karin Heurlier and colleagues at the Universities of Nottingham and Birmingham in conjunction with Biolog Inc of California USA, used powerful high throughput analytical tools (phenotype microarrays) that enabled them to compare about 2000 growth characteristics of several pathogenic (disease-causing) *E. coli* with a non-pathogenic laboratory *E. coli* strain. At the Society for General Microbiology's meeting at Heriot-Watt University, Edinburgh, today (9 September) they reported that they had found that the pathogenic strains could survive in different conditions compared to the standard laboratory, non-pathogenic strain.

Contamination by foodborne *E. coli* occurs in processed foods such as ready prepared salads, fermented sausages (e.g. salami), dairy products and fruit juices as well as more usually in raw and partly cooked meat products, indicating that the bacteria are able to survive modern food processing techniques. The researchers found differences between strains in how they responded to antimicrobial compounds, and in their reactions to oxygen availability, acidity and chemical stresses. They could also use different constituents in foods for their nutrition compared to standard laboratory *E. coli* strains.

"The laboratory *E. coli* strain K-12 is one of the best understood organisms on Earth," said Dr Heurlier, "But because it has become so used to being grown in laboratory conditions, it may not react to stresses in the same way as pathogenic strains - such as *E. coli* O157:H7 can. Our research shows that there are definite growth and

nutrition differences between *E. coli* strains and therefore results obtained with laboratory strains may not be typical of what happens in the 'real world'".

Source: Society for General Microbiology

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