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Book review — Boekresensie

Escherichia coli O157 in farm animals

Edited by C S Stewart and H J Flint

1999. CABI Publishing, Wallingford, 256 pp., hard cover. £45 (US\$85). ISBN 0 85199 332 X.

This book results from a workshop held in 1998 to discuss the growing problem of food poisoning due to *E. coli* O157.

A huge research effort in the past decades has resulted in a much better understanding of the complexity of pathogenic factors that are produced by some strains of *E. coli*. *E. coli* O157 belongs to the verotoxin-producing group of *E. coli*, responsible for haemorrhagic enteritis in man and animals, as well as haemolytic uraemic syndrome (HUS) and thrombotic thrombocytopenic purpura (TTP) in man. *E. coli* O157 is the main type causing these syndromes, but a number of other strains may also be involved.

The first chapter describes the very complicated genetics and molecular ecology of *E. coli*, and explains the molecular action of the 2 types of verotoxins and how they relate to the resultant pathology. Verotoxins attach to G3b receptors, especially common in the kidney and brain, and this explains the urinary and paralytic signs observed. Oedema disease in pigs is a good example of verotoxin action.

The chief reservoir of *E. coli* O157 is cattle, and it is carried in a transient irregular fashion in especially the rumen and colon. Carriage depends on cattle feeding practices, such as fasting that occurs during transport, the use of probiotics, and the

effect of plant metabolites. The bacterium is usually carried as a commensal by animals, as it only tends to cause disease in calves and piglets, and not adult animals.

Food poisoning by *E. coli* O157 in man is usually as a result of the consumption of meat, dairy products, or organically grown vegetables that have not been properly washed. As the infective dose for man can be as low as 5–50 bacteria, and as carrier animals may shed as many as 10^5 *E. coli* per gram of faeces, it follows that even small amounts of faecal contamination could result in food poisoning in man.

The control of this and other pathogenic strains of *E. coli* on farms, in the abattoir and meat packaging premises, is thoroughly discussed in this book. There are also practical chapters on the experience that different authorities have had when faced with an outbreak.

This book is recommended for anyone working in the food hygiene field, both in a regulatory capacity and in the laboratory. It would also be useful to anyone wanting to gain a deeper understanding of the molecular mechanisms of *E. coli* virulence.

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