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population) in poultry meat of 0·48–0·54 kGy. Tryptone Soya Yeast Extract broth (TSYE) and minced meats (raw and cooked beef and chicken) were sterilized by irradiation (25 kGy) and inoculated with *L. monocytogenes* (10^2 cfu/g) before storage at 5°C. The organism grew more rapidly in TSYE broth compared with the other substrates and reached *ca* 10^9 cfu/g after 14 d at 5°C. With respect to the meats, higher counts were obtained in beef than in chicken and in the cooked products compared with the raw. The organism grew most slowly in raw poultry meat with only *ca* 10^4 cfu/g being detected after 14 d storage.

Later, raw and cooked chicken minces were inoculated with *L. monocytogenes* (10^6 cfu/g) before low dose irradiation (2·5 kGy) and storage at 5 and 10°C (15 d). In all cases *L. monocytogenes* numbers remained below the detection limit of 10^2 cfu/g. However, enrichment techniques indicated that low numbers of *L. monocytogenes* were present. The listerias that survived the irradiation treatment were therefore unable to multiply rapidly during storage.

A Microbiological Survey of an Abattoir. By HELEN M. WARD, KATHY J. BOLTON and W.M. WAITES (*Department of Applied Biochemistry and Food Science, Faculty of Agricultural and Food Sciences, University of Nottingham, Sutton Bonington, Loughborough, Leics LE12 5RD, UK*).

An abattoir which slaughtered cattle, sheep and pigs in sequence on the same day was surveyed for coliforms, *Brochothrix thermosphacta*, *Pseudomonas* spp. and yeasts and moulds.

Beef carcasses were less contaminated than lamb and pig at every stage of the process. In general, counts increased throughout the day and towards the end of the slaughter line. Counts per 4 cm^2 on butchered pig carcasses were higher than those on lamb or beef and reached 10^6 for *Pseudomonas*, 8×10^5 for *B. thermosphacta*, 2×10^4 for yeasts and moulds and 8×10^4 for coliforms. Particular points of contamination were the butchery table and conveyor.

Brochothrix thermosphacta could not be detected on cattle during their slaughter until the carcasses were in the chill room, suggesting that the organism was endemic within the slaughter house.

Use of Bioluminescence to Study Heat Resistance of Spores of *Bacillus megaterium* KM. By L.R. HALL, S.E. HARDING and W.M. WAITES (*Department of Applied Biochemistry and Food Science, Faculty of Agricultural and Food Sciences, University of Nottingham, Sutton Bonington, Loughborough, Leics LE12 5RD, UK*).

pOCMS394, obtained as a generous gift from Ofer Carmi and Jon Kuhn (Technion-Israel Institute, Haifa), confers a sporulation associated bioluminescent phenotype on *Bacillus megaterium* KM. pOCMS394 transformants induce major changes in bioluminescence at about stage II of sporulation. The final product of sporulation is a heat stable and metabolically dormant endospore. The spores obtained from phenotypically bioluminescent *lux* containing *B. megaterium* KM are dark. The onset of electron transport and the initiation of metabolism is, however, a very early event during spore germination, a process which ultimately converts the spore back into a vegetative cell.

For *lux*-containing spores, germination is accompanied by the emergence of bioluminescence, providing a sensitive real-time monitor of germination and outgrowth. We have compared bioluminescence and viable plate counts as parameters to evaluate the thermal death of *B. megaterium* KM spores at 90°C. In unheated spores germinating in L-alanine plus L-broth, light was produced immediately after germination and increased by one hundred fold after 100 min. Spores heated for 0, 15, 30, 60, 90 and 150 min at 90°C showed decreasing amounts of light on germination and the time to increase by 100-fold was delayed. The results support the use of *lux*-containing bacterial spores as a rapid monitor of wet heat sterilization.

The Adhesion of *Aeromonas* Bacteria Isolated from Food and Clinical Sources to Human Intestinal Tissue. By S. ROGERS, R. BEN-RUWIN, G.M. MATHIAS, R.M. WILLIAMS* and R.W.A. PARK (*Department of Microbiology, University of Reading, London Road, Reading RG1 5AQ and *Department of Histology, Royal Berkshire Hospital, Reading RG1 5AN, UK*).

The increasing awareness of the importance of the motile, mesophilic *Aeromonas* spp. in human diarrhoea necessitates research into the pathogenic processes employed by these bacteria to