Antibiotic Resistance in Coliforms from Animal Feeding Stuffs

D. H. M. JOYNSON AND C. H. L. HOWELLS (*Public Health Laboratory, University Hospital of Wales, Cardiff*) Samples of animal feeding stuffs were examined for the presence of Gram-negative, lactose-fermenting organisms (hereafter called coliforms) and the antibiotic resistance of any strain isolated was determined.

Coliforms were found in 13% of all the feeds examined and of these organisms 64.4% were found to be resistant to one or more antibiotic.

A high proportion (45.5%) were resistant to ampicillin, but resistance to other antibiotics was lower: colistin (16.6%), streptomycin (10.6%), tetracycline (5.8%), and neomycin (0.1%).

Resistance to three or more antibiotics was demonstrated by 6.5% of the coliforms isolated. Transfer of R-factors to a sensitive *E. coli* recipient was demonstrated in 86.4% of the multiresistant strains examined.

Antibiotic-resistant strains of coliforms have been regarded as a danger to human health for many years. It is believed that these bacteria arise from animals which have been given antibiotics as growth supplements, the organisms eventually finding their way to man via untreated meats, etcetera. It has also been demonstrated that some of these microorganisms may find their way into the hospital kitchen and thus, via washing-up water and utensils, to the patients.

As far as known, however, no one has yet suggested that animal feeding stuffs already containing antibiotic-resistant strains of coliforms may be the source of animal infection with such organisms.

Three Studies of Salmonellae in South Wales

R. W. S. HARVEY (*Public Health Laboratory, University Hospital of Wales, Cardiff*) Salmonella surveillance has been one of our interests in Cardiff during the last twenty or more years. Three studies in monitoring this disease were described. The first investigation was performed on the incidence of salmonellae in the River Taff. Our attention was drawn to the presence of these organisms in the river, when advice was asked about the dangers of bathing in it. A wide range of serotypes was isolated in this study. Some of these were probably of human origin (*S. paratyphi B*, *S. typhimurium*, *S. panama*, and

S. brandenburg). These were the serotypes prevalent in human infection during the river survey.

Further information was sought on the origin of the wide range of salmonella serotypes found and a survey of human sewage was arranged. An estate housing 4000 persons was selected. Surface water samples were negative for salmonellae. Sewage samples were consistently positive. The survey when completed revealed the presence of a wide range of serotypes. Some were unusual (Subgenus II serotypes) and suggested an exotic source. The wide range of salmonella recovered could be explained by animal feed playing a significant part in the epidemiology of salmonellosis in the United Kingdom.

Poultry consume infected animal feed and the final survey was directed to the salmonella content of poultry samples entering the kitchens of the University Hospital of Wales. The samples frequently contained salmonellae and there was some correspondence between the serotypes isolated from the poultry and those found in sewer swabs placed in the paediatric department of the University Hospital of Wales during the survey period. The poultry serotypes also corresponded to some extent with those found in man in Cardiff in the same time period.

Further Studies on Giant Nuclear Masses in Disseminated Intravascular Coagulation

H. B. GOODALL (*Ninewells Hospital and Medical School, Dundee*) Giant nuclear masses have been found in the lungs and blood in malignant malaria (Goodall, 1973a and b). As these structures may be derived from vascular endothelial cells damaged in disseminated intravascular coagulation (DIC), further studies have been made on the blood of patients with disseminated intravascular coagulation associated with other disorders, particularly endotoxin shock, acute pancreatitis, accidental hypothermia, and obstetric complications. Simple quantitative techniques with buffy coat and thick film preparations have been used on patients and control subjects. Smears have been stained with Leishman's stain, Giemsa's stain, and the Feulgen technique.

Two questions have been asked. First, do giant nuclear masses commonly occur in the blood of patients with disseminated intravascular coagulation? The answer is yes! Second, is the presence of such masses always a harbinger of death? The answer is no!

References

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Absorption of Hexachlorophane from Newborn Infants' Skin

V. G. ALDER AND W. A. GILLESPIE (*Bristol Royal Hospital for Sick Children and University of Bristol*) In a maternity hospital in which the umbilicus and trunk of healthy newborn infants were treated with 0.33 per cent hexachlorophane dusting powder, the hexachlorophane content of blood was measured in mothers before delivery, in infants' umbilical samples at birth, and at 8 days of age in capillary blood samples. One mother and her baby had rather high blood levels of hexachlorophane, probably derived from a toilet preparation used before admission to hospital. Hexachlorophane was absent or barely detectable in the other mothers' blood and in the infants' umbilical blood. The hexachlorophane concentrations in the blood of 8-day-old infants ranged from nil to 0.166 μg per ml (mean 0.066 μg per ml). These were much less than the concentrations reported to be toxic in animals.

In a previous trial now reported here, a dusting powder containing chlorhexidine instead of hexachlorophane was found to delay the separation of the umbilical cord, perhaps because of its wider antibacterial range of action. Because this delay was sometimes inconvenient, the trial of chlorhexidine was discontinued.

Effect of Pregnancy on Calcium Homeostasis in Asian Immigrants

NINA POLANSKA, R. A. DALE, AND M. R. WILLS (*Departments of Chemical Pathology, West Middlesex Hospital and Royal Free Hospital, London*) It is recognized that rickets in children and osteomalacia in adults, both biochemical and clinical, occur more frequently in Asian immigrants to this country than in the indigenous white population.

During pregnancy, because of the increased demand for calcium for growth of the fetal skeleton, a negative calcium balance may occur in the mother particularly if she is already vitamin D deficient. It is recognized that during the progress of normal pregnancy there is a variation in the concentration of many plasma constituents with, in particular, a reduction in total protein, albumin, and calcium, and with a rise in alkaline phosphatase