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Variations in residues of persistent organic pollutants in a platypus (*Ornithorhynchus anatinus*) at consecutive samplings

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sampling period. Furthermore, the SF from liver samples collected until 20 DPD also contained sufficient infectious RHD virus to kill all susceptible recipient rabbits. However, SF from liver samples collected at 26 and 30 DPD did not kill any of six recipient rabbits, despite the presence of viral antigen in the SF, as demonstrated by ELISA. Three of these six surviving rabbits developed antibodies to RHD virus, one of three inoculated with SF from liver collected at 26 DPD, and two of three from liver collected at 30 DPD.

This study yielded preliminary information on the persistence of RHD virus in the liver of infected rabbit carcasses held at 22°C. While viral antigen could be detected for at least 30 DPD in a decomposing liver, infectious RHD virus survived for only 20 to 26 days. After this point, the virus presumably began to degrade rendering it non-infectious. Nevertheless, there was sufficient viral antigen in the SF of decomposing livers collected 26 and 30 DPD, firstly, to be detected by antigen-capture ELISA, and, secondly, to cause seroconversion in inoculated susceptible rabbits. These findings indicate that persistent virus in infected rabbit carcasses may be a source of infection to other rabbits by mechanical transmission from scavengers and insects that feed on the carcass.

The results of this small study suggest that, in addition to direct rabbit to rabbit transmission of the virus and the possibility of vector-borne transmission of the disease, the persistence of virus in infected carcasses may be an important factor in the epidemiology of RHD.

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Variations in residues of persistent organic pollutants in a platypus (*Ornithorhynchus anatinus*) at consecutive samplings

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SDDT	Sum of p,p'-DDE, p,p'-DDD and p,p'-DDT
PCB	Polychlorinated biphenyls
PIT tag	Passive integrated transponder

Although it has been previously reported that concentrations of persistent organic pollutants such as DDT and PCBs increase in fat depots when animals are starved¹ these observations usually have been related to experimental animals at the group level. We believe our observations on a wild platypus, which was sampled twice, are unique and emphasize the problems associated with interpreting assays of xenobiotic residues when the physiological state of the animal is unknown.

A male platypus was trapped in a farm dam at Glengarry in Tasmania on 17 June 1998 and a tail adipose tissue biopsy was collected under general anaesthesia. Using the analytical method reported previously² it was found that the lipid content in the biopsy was 38% and the residues in this lipid were SDDT 0.34 µg/g (ppm), lindane was not detected and PCBs were 12.34 µg/g and highly chlorinated. Because the PCB concentration was much higher than those found previously² attempts were made to retrap the animal which was eventually captured again on 3 November 1998 and its identity verified by reading the PIT tag which had been inserted at the previous capture. The previous biopsy had healed well and the animal was strong and apparently healthy so another biopsy was undertaken on the other side of the tail (biopsies are taken from the lateral aspects of the ventral surface of the tail). However, only a small quantity of subcutaneous tissue was obtainable and, on analysis, it was found that the lipid content was only 1.8%. In this instance SDDT was 17.29 µg/g, lindane was not detected and the PCB concentration was 505.34 µg/g. These results raised a number of questions.

Firstly, the proportion of lipid in the second biopsy sample (1.8%) was the lowest encountered by the authors in an apparently-healthy animal and was much lower than the mean of 43% obtained from another 55 animals (Munday, Stewart and Södergren unpublished). Unfortunately, we have no information which explains this great loss of adipose tissue/lipid reserves.

Secondly, the question arose as to whether the greatly increased concentrations of DDT and PCBs were due to additional absorption of the toxicants during the period between

samplings or were due to these persistent, lipophilic compounds being concentrated in the very much reduced lipid pool. Because the ratio between the concentrations of DDT and PCBs remained remarkably constant (0.0275:1 and 0.0343:1) we believe that the latter interpretation is appropriate. Thus, our observations provide further evidence for persistent organic pollutants becoming more concentrated in reduced fat stores when, for one reason or the other, there is a loss of fatty tissues. This observation has important implications for interpretation of analytical results because the use of inflexible criteria could easily result in erroneous interpretations.

Another item of interest was that the concentrations of PCBs in this animal were much higher than those of 16 other platypuses sampled in the immediate vicinity. The lipid content of the tail adipose tissue in these animals varied from 14 to 67% and PCB concentrations varied from 0.07 to 1.42 µg/g. It is suggested that the animal with the very high residues had travelled from near the town of Exeter where there had been a veri-

fied spill of PCBs in transformer oil (P Tattersall personal communication). This possible source of the PCBs in the animal's tailfat was further suggested by the fact that PCBs previously used in transformer oils in Tasmania were highly chlorinated (personal communication Tasmanian Department of Primary Industry Water and the Environment). While the distances between the two sites are in the order of 10 km by land and up to 20km by water it is feasible for a platypus to traverse such distances³.

These studies were approved by the University of Tasmania's Animal Ethics Committee, permit number 97054.

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OBITUARY

Michael Shallow

All who knew Mike Shallow were deeply saddened by his sudden death on 23 August 2001. Mike was well known in the veterinary and agricultural industry for his involvement in rural veterinary practice, livestock consultancy and work with Primary Industries and Resources South Australia (PIRSA). He was also president elect of the Australian Sheep Veterinary Society due to take office at the 2002 AVA conference in Adelaide.

Born in Adelaide in 1950, Mike completed his schooling in Adelaide, graduated from Roseworthy Agricultural College in 1971 and completed a Diploma in Teaching at Adelaide Teachers College. He commenced teaching agricultural science at Eudunda, near the Barossa Valley and at St Michael's College, his old school. In 1975 he gained entry to the new veterinary school at Murdoch University. During his time in Perth, he met Gaynor and they married upon graduation in 1980. He had gained a cadetship in 1976 and so commenced work with the SA Department of Agriculture as a District Veterinary Officer involved predominantly in the brucellosis and TB eradication campaign. He also took a keen interest in sheep health and production, which led on to the development of a sheep consultancy group in the Adelaide hills. He maintained his interest in consultancy while working for the Victor Harbor veterinary practice from 1985 to 1989. With Gaynor and their two daughters, Danielle and Natalie, they moved to Western Australia in early 1989. Mike was initially employed as veterinary epidemiologist with the WA Department of Agriculture, but soon purchased the Moora Veterinary practice, which was later sold to concentrate on a flourishing sheep consultancy business they had developed. Mike was also actively involved in the Australian Association of Agricultural Consultants. He returned to Victor Harbor in 1995 and set up Fleurieu AgVet consultancy. Mike worked with fellow Murdoch graduates, Debbie Lehmann and Greg Johnsson, in the Kangaroo Island veterinary practice servicing sheep consultancy clients and later jointly set up AgVet SA. Business thrived, but a melanoma scare in late 1998 caused Mike to rethink his career path. This was fortunate for PIRSA. Following a consultancy on the progress of the ovine Johne's disease program in SA, Mike joined the Department full-time to administer the State program. He more recently gained a position in charge of animal health training and industry liaison, but his knowledge, experience and PR skills ensured continued commitment to the ovine Johne's disease program. His loyalty and love for consultancy led to him continuing to work weekends with his Kangaroo Island clients despite the heavy workload with PIRSA.

Mike's dedication, commitment and interpersonal skills were similarly apparent in his sporting life. Apart from a decorated career in SA and WA football leagues with West Torrens and Swan Districts respectively, he was also a keen basketballer and chosen in the State team in his late teens. His generous nature, leadership and football skills were evident as inaugural playing coach for the Murdoch University 'Boomers' football club and in many other coaching roles he had in subsequent associations. He played football into his 40s and had been playing basketball at the time he died. His passion for life and commitment was equally evident through his family life with Gaynor and his daughters. Mike's relaxed, self-confident and friendly approach combined with a considerate nature meant that he was well liked in all walks of life.

Mike's untimely death left a sense of disbelief and emptiness for the many whose lives he had touched and professionally has left a large hole in the agricultural service industry. Our hearts go out to Gaynor, Danielle and Natalie and trust that we can all find some solace in Mike having made our lives richer through the friendship he so warmly gave.

C Trengove