

## Selected Abstracts

### **Carbon dioxide for euthanasia: concerns regarding pain and distress, with special reference to mice and rats**

**Conlee KM, Stephens ML, Rowan AN and King LA** 2005 Carbon dioxide for euthanasia: concerns regarding pain and distress, with special reference to mice and rats. *Laboratory Animals* 39(2): 137-161

Carbon dioxide (CO<sub>2</sub>) is the most commonly used agent for euthanasia of laboratory rodents, used on an estimated tens of millions of laboratory rodents per year worldwide, yet there is a growing body of evidence indicating that exposure to CO<sub>2</sub> causes more than momentary pain and distress in these and other animals. We reviewed the available literature on the use of CO<sub>2</sub> for euthanasia (as well as anaesthesia) and also informally canvassed laboratory animal personnel for their opinions regarding this topic. Our review addresses key issues such as CO<sub>2</sub> flow rate and final concentration, presence of oxygen, and prefilled chambers (the animal is added to the chamber once a predetermined concentration and flow rate have been reached) versus gradual induction (the animal is put into an empty chamber and the gas agent(s) is gradually introduced at a fixed rate). Internationally, animal research standards specify that any procedure that would cause pain or distress in humans should be assumed to do so in non-human animals as well (Public Health Service 1986, US Department of Agriculture 1997, Organization for Economic Cooperation and Development 2000). European Union guidelines, however, specify a certain threshold of pain or distress, such as 'skilled insertion of a hypodermic needle', as the starting point at which regulation of the use of animals in experimental or other scientific procedures begins (Biotechnology Regulatory Atlas n.d.). There is clear evidence in the human literature that CO<sub>2</sub> exposure is painful and distressful, while the non-human literature is equivocal. However, the fact that a number of studies do conclude that CO<sub>2</sub> causes pain and distress in animals indicates a need for careful reconsideration of its use. Finally, this review offers recommendations for alternatives to the use of CO<sub>2</sub> as a euthanasia agent.

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### **Empathy and attitudes to animals**

**Taylor N and Signal TD** 2005 Empathy and attitudes to animals. *Anthrozoös* 18(1): 18-27

There is increasing support for the idea that human attitudes to animals may be indicative of human-human empathy. This has implications for the treatment of empathy deficits and related anti-social behaviors. The purpose of the present study was to explicitly investigate links between human-human empathy and attitudes to animals. The Interpersonal

Reactivity Index (IRI) and Animal Attitude Scale (AAS) were administered to 194 undergraduate Sociology and Psychology students. A significant correlation between empathy levels, gender, companion animal ownership and attitudes to animals was found. Implications of these findings are discussed.

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### **Prevalence of obesity in dogs examined by Australian veterinary practices and the risk factors involved**

**McGreevy PD, Thomson PC, Pride C, Fawcett A, Grassi T and Jones B** 2005 Prevalence of obesity in dogs examined by Australian veterinary practices and the risk factors involved. *Veterinary Record* 156: 695-702

A study was undertaken to determine the prevalence of obesity in dogs examined by veterinary practices across Australia, and to determine the risk factors involved; 1700 practices were asked to complete a veterinarian opinion survey, and of the 428 practices that responded, 178 were selected to complete an RSPCA Australia Pet Obesity Questionnaire, together with additional practices selected by Australian State and Territory RSPCA societies. This questionnaire was sent to a total of 209 practices which were asked to record details of eligible dogs, and the reason why they had been examined during the previous month. Fifty-two (24.9 per cent) of the practices responded and provided data on 2661 dogs, of which 892 (33.5 per cent) were overweight and 201 (7.6 per cent) were obese. A further 112 dogs (4.2 per cent) were classified as thin or very thin, but these were excluded from subsequent analyses. Of the remaining 2549 dogs, approximately half were female and 1905 (74.7 per cent) were neutered. The dogs' weight category was influenced by several factors. Breed influenced the importance of sex and neutering as risk factors. The prevalence of overweight and obese dogs combined was 41 per cent; the prevalence increased with age up to about 10 years old, and then declined. Rural and semirural dogs were more at risk of obesity than urban and suburban dogs.

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### **Individual coping characteristics, aggressiveness and fighting strategies in pigs**

**Bolhuis JE, Schouten WGP, Schrama JW and Wiegant VM** 2005 Individual coping characteristics, aggressiveness and fighting strategies in pigs. *Animal Behaviour* 69: 1085-1091

Individual pigs, *Sus scrofa*, differ considerably in how aggressive they are during encounters with unfamiliar conspecifics. We examined whether individual coping characteristics of pigs were predictive of aggression during social encounters and the resulting social status. Piglets were subjected to the Backtest during the suckling period,

as their behavioural response in this test seems to be predictive of their coping style. Each piglet was restrained in a supine position for 1 min and the resistance (ie number of escape attempts) was scored. After weaning, 30 'high-resisting' (HR) and 30 'low-resisting' (LR) pigs were regrouped with unfamiliar pigs of similar weight and we recorded their aggressive behaviour for 180 min. In addition, we assessed the social rank of each pig. HR pigs showed more aggressive behaviour than LR pigs: they initiated more fights, started fighting earlier and spent more time fighting during the observation period. HR and LR pigs did not differ, however, in achieved social rank. Level of self-initiated fighting was positively correlated with

social rank in LR pigs, but this relation was not found in HR pigs. In conclusion, the coping style of pigs is related to their aggressive behaviour and the establishment of dominance relationships after mixing. Our results indicate that LR pigs are flexible in using aggression, whereas the high level of aggression of HR pigs regardless of their success in encounters suggests that these animals are more rigid in their aggressive behaviour.

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