

Enclosure 8: Log of reported cases of thiamine deficiency in dogs and cats in Australia (1991-2010)

Thiamine deficiency associated with sulphite treated pet food and fresh raw pet meat has been reported regularly in the Australian literature.

It is highly likely that the incidence of sulphite preservative-induced thiamine deficiency is significantly under reported due to lack of recognition, in part due to the diverse nature of neurologic signs seen and lack of awareness amongst veterinarians and owners. In addition, the lack of a formal adverse reporting mechanism means that vets are currently unable to report cases formally.

Table 1: Reported cases of thiamine deficiency in cats and dogs related to pet food/fresh raw pet meat in Australia 1991-2010

Year	Cases reported in Australia
1991	A shelter housing approximately 200 cats reported a syndrome of depression, pupillary dilatation and ataxia which occasionally progressed to seizures and death and had been observed in resident cats for several years. Numbers affected varied from less than one per month to 40 with 4 deaths in a 10-month period. Cats in the shelter were fed a diet of fresh minced pet meat and canned cat food, approximately 1:1, which was mixed by hand 0.5 to 2 h before feeding. The meat, either ox cheek or kangaroo, was delivered by a pet meat supplier twice weekly and refrigerated until used. Thiamine deficiency was identified, the cats were injected with thiamine and there was a rapid clinical improvement. No further deaths were reported. Reference: Studdert V.P. and Labuc R.H. (1991) Thiamin deficiency in cats and dogs associated with feeding meat preserved with sulphur dioxide, <i>Australian Veterinary Journal</i>, 68(2): 54-57.
1991	A 4-year-old male German shepherd dog had a 48 hr history of forelimb extension and seizures before dying despite veterinary treatment. Treatment was symptomatic only, as thiamin deficiency was not suspected. Histopathological lesions in the brain, consistent with thiamin deficiency, were found. The dog had been fed only fresh pet mince for the previous 6 weeks. The meat was obtained from a local pet shop, where the product, chopped beef, was referred to as puppy mince. Reference: Studdert V.P. and Labuc R.H. (1991) Thiamin deficiency in cats and dogs associated with feeding meat preserved with sulphur dioxide, <i>Australian Veterinary Journal</i>, 68(2): 54-57.

Year	Cases reported in Australia
1991	A 4-year-old male English springer spaniel was presented with a history of weight loss for one week and vomiting, ataxia, hyperaesthesia, particularly on extension of the neck, proprioceptive deficits and seizures for 48 hrs. At the time of examination, the dog was dull and hyporesponsive to stimuli. Two days later the owner's other dog, a 4-year-old female English springer spaniel, developed a similar ataxia. Both dogs had been fed a diet based on fresh pet meat with added vegetables and table scraps for a long period, but in the 3 wks prior to the onset of signs in the first dog, only the pet meat had been given. Both dogs showed a rapid improvement and resolution of clinical signs following parenteral treatment with thiamin. Reference: Studdert V.P. and Labuc R.H. (1991) Thiamin deficiency in cats and dogs associated with feeding meat preserved with sulphur dioxide, <i>Australian Veterinary Journal</i>, 68(2): 54-57.
1991	6 dogs showed acute signs of hindlimb ataxia and paraplegia or quadriplegia progressing to paralysis with extensor rigidity. Three of the clinically affected dogs, euthanased within 2 days of the onset of signs, were submitted for post-mortem examination. Histopathological lesions in the brain, characteristic of thiamine deficiency, were found in 2 dogs, one of which also had focal degenerative lesions in the myocardium. An affected surviving dog with paraparesis showed some knuckling with absent placing, hopping and stretch reflexes, and slow pedal withdrawal reflexes in the hindlimbs. This dog and 2 others, less severely affected, were treated parenterally with thiamin. This dog showed a slow improvement, becoming ambulatory within 7 days. Three months later, the owner reported near complete recovery but a slight hindlimb ataxia was still detectable. There was more rapid improvement in the less affected dogs. All dogs in the kennel had been fed a diet based on horse meat obtained from a local knackery with added breakfast-type cereals, lucerne meal, limestone and rendering residue. A sample of the meat was found to contain 420 mg SO₂/kg. After the diagnosis was made, all unaffected dogs were treated parenterally with thiamin and the meat source was changed to one reportedly not using SO₂ preservatives. No other dogs were affected. Reference: Studdert V.P. and Labuc R.H. (1991) Thiamin deficiency in cats and dogs associated with feeding meat preserved with sulphur dioxide, <i>Australian Veterinary Journal</i>, 68(2): 54-57.

Year	Cases reported in Australia
1996	A 4-year-old female spayed Maltese Terrier was presented with a 3 day history of inappetence and vomiting. The dog rapidly deteriorated. The dog had a stiff hind limb gait, fore limb hypermetria, increased muscle tone and reduced conscious proprioception to the hind limbs. Partial seizure activity occurred when the dog was stimulated. Clinical signs progressed within 24 hrs to marked obtundation and lateral recumbency with hyperextension of all limbs. Intermittent horizontal and vertical nystagmus was elicited when the dog was positioned in dorsal recumbency. Postural reactions were absent in all limbs. Neurological examination indicated multifocal central nervous system disease with bilateral brainstem involvement. Differential diagnoses included thiamine deficiency. Further enquiries revealed the dog was exclusively fed a non-refrigerated pet food roll containing sulphites. The dog was treated with vitamin B1 50 mg SC. A rapid improvement was seen within 12 hrs. The dog was ataxic but ambulatory with improvement in conscious proprioception and postural reactions. The dog continued to improve and was discharged 5 days after presentation. Treatment was continued with 100 mg vitamin B1 orally every 24 hrs. The dogs' diet was changed to a quality commercial complete dog food. Two years later the dog was clinically normal. Reference: Singh M., Thompson M., Sullivan N. and Child G. (2005) Thiamine deficiency in dogs due to the feeding of sulphite preserved meat, <i>Australian Veterinary Journal</i>, 83(7): 412-417.
1996	Ginger, a five year old female domestic shorthair cat was presented in a very distressed state. She was generally ataxic with frequent severe bouts of ventroflexion of the neck, loud manic cries and dilated pupils. A probable diagnosis of thiamine deficiency in a cat fed mainly on meat roll containing sulphite preservatives was made. Thiamine was administered and the cat became clinically normal. Reference: Sames M. (1996) Thiamine deficiency, <i>Control & Therapy</i> Series No. 3854, Mailing No 191, Post Graduate Foundation in Veterinary Science of the University of Sydney.

Year	Cases reported in Australia
1997	An 11 year old pet cat died from acute thiamine deficiency. The cat was being fed a diet of raw vacuum-packed kangaroo mince. 38 days after starting the kangaroo meat the cat developed neurological abnormalities and died suddenly. The remaining meat and two unopened containers were analysed by the New South Wales Health Department. Sulphur dioxide concentrations of 275 mg/kg, 355 mg/kg and 325 mg/kg, respectively, were found. The thiamine content of these samples was not assayed but would be expected to be greatly reduced. Reference: Steel RJ (1997) Thiamine deficiency in a cat associated with the preservation of 'pet meat' with sulphur dioxide, <i>Australian Veterinary Journal</i>, 75(10): 719-721.
2003	A 6 year old Golden Retriever had been fed meat sold for pet consumption, vegetables, rice and a small amount of dry dog food. In the 6 weeks prior to presentation the pet meat had been sourced from a different pet food supplier and the dog had been fed this meat almost exclusively. The concentration of SO₂ in the same batch of pet meat fed to the dog was 676 mg/kg. The dog's clinical abnormalities, combined with the MRI findings were consistent with thiamine deficiency. The dog was treated with thiamine and the subsequent rapid improvement in neurological signs confirmed the diagnosis of thiamine deficiency. Seven months later the dog was neurologically normal on a diet of quality commercial maintenance dog food. Reference: Singh M., Thompson M., Sullivan N. and Child G. (2005) Thiamine deficiency in dogs due to the feeding of sulphite preserved meat, <i>Australian Veterinary Journal</i>, 83(7): 412-417.
2003	Three 7-week-old American Staffordshire Terriers were presented to the referring veterinarian in April 2003 for progressive neurological signs. The puppies had been weaned at 3 to 4 weeks of age onto a mixture of kangaroo mince, brewer's yeast, flaxseed and cod liver oil. All three puppies were euthanased. The histological lesions were typical of thiamine deficiency with secondary hydrocephalus. Reference: Singh M., Thompson M., Sullivan N. and Child G. (2005) Thiamine deficiency in dogs due to the feeding of sulphite preserved meat, <i>Australian Veterinary Journal</i>, 83(7): 412-417.

Year	Cases reported in Australia
2007	'Bailey' a 4-year-old domestic shorthair Persian cross was presented with a history of neurological abnormalities including seizures. For the past three years Bailey's diet consisted of dry food and pre-packaged roo mince from the supermarket. Prior to clinical signs developing the owners recalled he had become more selective, eating less dry food and mainly the mince. The owners were happy to feed solely mince at this stage. The mince contained preservative 220 (sulphites are 220-228). A diagnosis of thiamine deficiency and sulphite-induced seizures was made. Bailey was treated with a change of diet, thiamine supplementation (one tablet daily for seven days) and anti-seizure medication for a few months with gradual tapering off. Bailey recovered. The authors note that initial signs of thiamine deficiency can be subtle, non-specific and easily misinterpreted or overlooked. They also note that with the increasing popularity of feeding 'fresh meat' it is important to warn owners of the dangers of sulphite and sulphur dioxide preservatives. King L. and Steele V. (Moffat Beach Veterinary Surgery) (2007) Thiamine Deficiency in a Cat, <i>Control and Therapy</i> series No. 4781, Mailing 246, Centre for Veterinary Education, The University of Sydney.
2009	In Western Australia 4 dogs exclusively fed a commercial pet diet available at supermarkets, presented with marked neurological signs and were diagnosed with thiamine deficiency due to sulphur preservatives in the food. The majority of reported animals died including pet dogs Jia and Bozo. Reference: Paul A, Fitzgerald L., Fletcher M., Bell E., Sharman M., Irwin P., Foster S., Cave N., O'Gara A. and Mansfield C. (2010) Recent Pet Food Toxicities in Western Australia, <i>Australian College of Veterinary Scientists, Small Animal Medicine Chapter</i>.

Year	Cases reported in Australia
2009	'Buster', a 2-year-old Tonkinese cat, was presented due to acute onset of staggering. The owner fed her pets various commercial foods including packaged 'fresh meat'. Lately Buster had shown a marked preference for the 'fresh' meat. Thiamine deficiency was identified and Buster was given an injection of thiamine (40mg SCI), the 'fresh' meat was stopped and he was fed some Vegemite® (which contains vitamin B1). The next day Buster had improved and 2 days later he was normal. A solution of Malachite green was applied to the pet meat product which confirmed the presence of sulphur preservatives. The authors note that they had also treated a dog with recurrent vestibular signs, being fed a 'natural' concoction of meat and vegetables. The product was tested with Malachite green solution which confirmed the presence of sulphur preservatives. The dog was treated by feeding on commercial dry dog food and the dog recovered. Reference: Hayres G. (North Croydon Veterinary Clinic) (2009) Sulphur preservatives and thiamine deficiency, <i>Control & Therapy</i> Series No. 4976, 254, Centre for Veterinary Education, The University of Sydney.