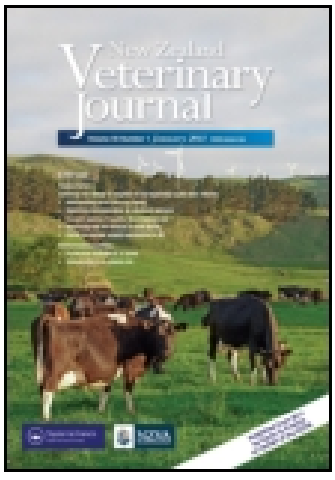

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Coronavirus antibody titres in cats in New Zealand

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Disease associated with feline infectious peritonitis virus (FIPV), a coronavirus, is uncommon in New Zealand but important in that it is almost invariably fatal. The records of the Massey University Small Animal Clinic suggest that FIP is a rare disease, although there have been reports of FIP in cats from the South Island (B. Carroll, pers. comm.). It was therefore of interest to establish the prevalence of coronavirus antibodies in cats in New Zealand.

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Blood was collected from 47 pedigree cats (Siamese, Burmese, Devon Rex, Abyssinian) of mixed age and sex during visits to cat breeders, and samples were also obtained from 14 non-pedigree individuals. Samples were collected by jugular venepuncture through a 22 gauge needle into plain 2 ml blood collection tubes. Serum was separated, harvested and stored at -20 °C. Sera were shipped on dry ice to the Department of Clinical Veterinary Science, University of Bristol, for antibody testing. An indirect homologous immunofluorescent technique was used to determine coronavirus antibody titres as described previously by Stoddart *et al.*[1].

The range of coronavirus titres is shown in Table I. Sixty-eight percent of the cats had a titre of 1:640 or greater.

Table I. Immunofluorescent coronavirus antibody titres in sixty-one healthy cats in New Zealand

	No. of cats with titres	
IFA titre	Pedigree	Domestic short-hair
0		
10		
20		
40	1	
80	3	
160	2	1
320	6	5
640	7	4
1280	14	2
≥2560	14	2

The coronavirus titres identified in this survey clearly indicate that coronaviruses are ubiquitous in cats in New Zealand. The titres encountered were higher than those reported in previous surveys of cats without FIP. In previous surveys around 10-50% of healthy cats have been found to have coronavirus antibodies[2]. However, marked geographical variations in the proportion of cats testing seropositive occur[3]. The background of the cats is also important and a high proportion of cats (up to 100%) may be seropositive in multicat households[4]. Most of the cats included in our survey were pedigree cats from breeding colonies which might explain the high proportion that were seropositive, although the small number of non-pedigree cats were also seropositive.

Test methodology may account for some variation in coronavirus titres, but the titres reported here are higher than those previously found in the survey of pedigree show cats in the United Kingdom and were tested in the same laboratory using the same test[3]. Techniques currently available for assessing coronavirus antibody titres are unable to differentiate antibodies induced by the pathogenic strains of FIPV and less pathogenic coronaviruses that may infect cats. The latter include non-pathogenic strains of FIPV, feline enteric coronavirus, canine coronavirus and possibly coronaviruses of other species. If the perception is correct that disease associated with FIPV infection is rare in New Zealand, the titres observed in this study presumably reflect exposure to avirulent or only mildly pathogenic coronaviruses.

The relationship between the coronaviruses which are able to infect cats is not clear. One theory is that they are distinctly separate viruses but antigenically related[5]. It has also been suggested that there are only minor variations between pathogenic and avirulent coronaviruses, with development of pathogenicity leading to FIP arising from spontaneous mutation of avirulent coronaviruses in the cat population[6]. If pathogenic strains of FIPV were to increase in prevalence in New Zealand, the high levels of coronavirus antibody present in the cats might render them particularly vulnerable to the development of FIP. The value of coronavirus serology as a diagnostic aid for FIP is controversial and is particularly limited if high titres of coronavirus antibodies are present in the healthy cat population[7]. It is clear from these results that the value of coronavirus titres in diagnosing FIPV infection would be dubious and it would be necessary to interpret titres with considerable caution.

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