

Katkor[®] cat litter, a non-invasive method of collecting cat urine for phosphate determination

P C Delpoort^{a*} and L J Fourie^b

ABSTRACT

This study was done to compare the collection of cat urine, for phosphate concentration determination, by catheterisation with that via a proprietary cat litter (Katkor[®]). The passage of urine through the litter or its retention in the litter for a period of 2 hours did not affect the concentration of phosphates compared with that of the original sample. Apart from a small volume of urine trapped in the litter by capillary action, and some urine adhering to the funnel in which the litter was placed, the litter proved to be an excellent medium for routine urine collection from cats, and more especially as an alternative to catheterisation when regular collection from a particular cat is required.

Key words: cat litter, cats, phosphate analysis, urine.

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Urine is usually collected from cats by catheterisation under general anaesthesia. This procedure is acceptable if a single sample is required, but not when regular collection is necessary. The variability in

^aClinVet International, PO Box 11186, Universitas, 9321 South Africa.

^bDepartment of Zoology and Entomology, University of the Free State, PO Box 339, Bloemfontein, 9300 South Africa.

*Author for correspondence. E-mail: peetd@clinvet.com
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urine phosphate concentrations between samples and between samples collected on successive days necessitates repeated collections. Not only is catheterisation invasive, but the simultaneous administration of a general anaesthetic often results in a loss of appetite accompanied by constipation, which further complicates the accurate determination of urine and faecal phosphate concentrations. Urine

phosphate level determination in cats is used in feeding studies and specifically when the effects of kidney-friendly diets are studied. This communication details the use of a granular, polypropylene cat litter (Katkor[®], Reinvet Products, Utrecht, the Netherlands) as a reliable alternative to catheterisation for the regular collection of urine from cats. Studies in the Netherlands indicate that the litter has no effect on pH levels, protein concentration or white or red blood cell counts in human urine. A study on polypropylene granules, similar to those in the litter, showed that they did not absorb or emit calcium, magnesium or phosphate¹.

Urine was collected from 10 cats by catheterisation under general anaesthesia and sub-sampled. One sub-sample was immediately analysed for phosphates; a 2nd sub-sample of the urine of 4 cats was poured into wide-mouthed funnels containing the litter, re-collected and analysed for phosphates. Urine sub-samples of all 10 cats were separately poured into litter, left in it for 2 hours, re-collected and phosphate levels determined (Table 1). Sub-samples of the urine of 3 cats were stored at approximately 4 °C for 7 days and again sub-sampled (Table 2). Upon reaching room temperature the 1st set of sub-samples was analysed for phosphates, the 2nd set was poured through the litter and then analysed while the 3rd set was left in the litter for 2 hours before analysis. Four samples spiked with specific concentrations of phosphate were also tested as controls.

The mean increase in phosphate concentrations between the urine samples of the 10 cats that were examined after collection and the same samples poured into and left in cat litter for 2 hours was 7.65 mmol/l on an initial reading of

Table 1: Urine phosphate levels in cat urine before and after retention in litter.

Cat identification	Urine phosphate concentration (mmol/l)	
	On collection	After 2 h in litter
F3T	39.8	54.2
ODT	96.8	108.9
B8T	37.1	43.7
C6T	138.5	129.0
1*	106.4	108.8
2*	90.5	93.5
3*	135.6	141.9
4*	155.7	169.3
5*	172.8	192.1
6*	98.7	106.6
Mean	107.16	114.81
SD	45.16	46.20

*The numbers of these cats were masked to ensure unbiased analyses.

Table 2: Urine phosphate concentrations before and after storage at 4 °C for 7 days.

Cat identification	Urine phosphate concentration on day of collection			Urine phosphate concentration after 7 days at 4 °C		
	Immediate (after catheterisation)	Through litter	Left in litter for 2 hours	Immediate (after catheterisation)	Through litter	Left in litter for 2 hours
F3T	39.8	54.2	54.2	39.8	55.7	59.3
ODT	96.8	102.0	108.9	109.3	108.3	118.2
B8T	37.1	41.5	43.7	43.6	42.2	47.2

107.16 mmol/l. The control samples spiked with phosphate at either 7.5 mmol/l or 13.3 mmol/l gave readings varying between 6.70 and 8.59 mmol/l ($n = 90$) and 12.39 and 14.79 mmol/l ($n = 90$), respectively. These differences of up to 14.5% are larger than the 7.13% difference observed for cat urine before and after it had been left in cat litter for 2 hours. There was no alteration in the pH of urine passed through the Katkor litter.

The weight of 130 g of Katkor litter

increased by 5.69 g after 73 ml of cat urine had been poured through it. This gain can be ascribed to the retention of liquid by capillary action common to any granular substance. A further 2.14 g of urine adhered to the surface of the funnels in which the litter was placed.

CONCLUSION

Katkor litter is a suitable medium for non-invasive collection of urine from cats for phosphate analysis, particularly when

this needs to be done repeatedly or collectively. It may also prove to be suitable for the determination of other parameters, e.g. glucose, but further studies in this regard are required.

REFERENCE

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