

Collection and storage of urine in N-balance trials with mink

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Introduction

Traditionally the urine is collected daily and stored frozen until analysis in N-balance trial with mink.

The purpose of this trial was to evaluate if 1 collection for a period of 4 days, preserves the N-amount in the urine.

Furthermore it has been evaluated how pH and N-percent in urine is affected by storage temperature, -time and sulphuric acid preservation.

Materials and methods

Trials have been performed with urine collected in bottles with sulphuric acid (A) and urine collected in bottles without sulphuric acid (B). In both trials the urine was collected from adult males, fed ad libitum.

Trail A

From 5 animals urine and spillage from drinking water was collected during 24 hours in bottles containing 15 ml of sulphuric acid (5% v/v). The urine from each animal was split into three bottles. 1 was analysed for pH and N percent immediately after collection (day 0) and the last 2 after storage in 4 days at 15°C and at ±18°C respectively, simulating two different methods of urine collection.

During a period of 10 hours the urine from 7 animals were collected in bottles without sulphuric acid. Spillage from the drinking water was separated from the urine. The urine from the 7 bottles were mixed and then split into 2 bottles - in 1 bottle sulphuric acid (5% v/v) was added. Each of the 2 bottles were split into 3 bottles, 1 of each was analysed for pH and N percent immediately after collection (day 0) and the last 4 after storage in 3 days at 5°C and 19°C respectively.



Digestibility cages for urine collection

Table 1. N percent and pH in urine with and without sulphuric acid collected in 10 hours and there after stored 72 hours either at 5°C or 19°C (trial B).

Sulphuric acid added	Storage time after collection	Temperature, °C	N %	pH
No	0h	-	2.9	7.2
	72h	5	3.0	8.9
	72h	19	2.9	9.5
Yes	0h	-	2.4	1.4
	72h	5	2.4	1.5
	72h	19	2.4	1.4

Results and discussion

The variation in urine and spillage of drinking water in trial A basically caused the different in the urinary N percent (figure 1). The urinary N percent was unaffected either by time or temperature. The N percent in trial B was higher than in trial A, due to the separation of the spillage from the drinking water. There was an increase in urine-pH, without sulphuric acid, after storage at 5 °C and 19 °C respectively (table 1). There was no change in urinary N percent or pH with time, temperature and of storage when containing sulphuric acid.

During the collection period faeces was collected every day. But it can not be excluded that during a period of 4 days there might be a contamination of the urine with faeces.

As faeces contain a certain amount of urease, there is a risk that ammonia is produced, even though the N percent in urine without sulphuric acid not was affected by time of storage or temperature in this trial, added acid will bind the ammonia.

Conclusion

When performing N-balance trials, the N percent in urine is preserved when collected once in a period of 4 days as well as a daily collection followed by freezing. However sulphuric acid (5% v/v) should be added to the collection bottles.

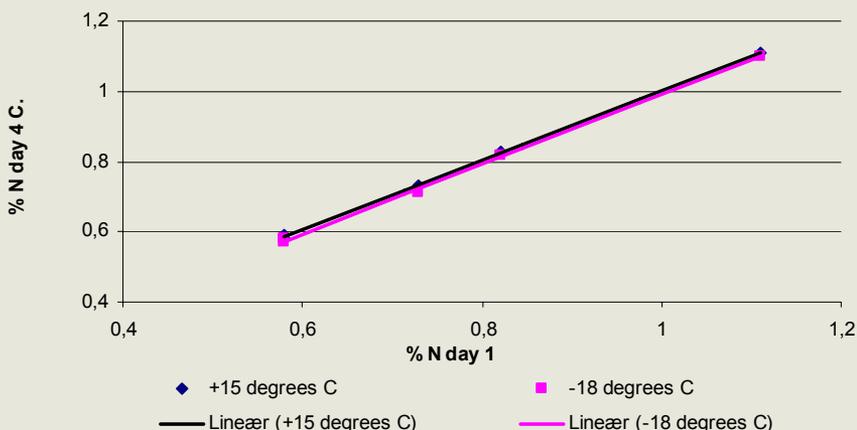


Figure 1. N percent in urine with sulphuric acid collected in 24 hours and there after stored 4 days either at 15°C or ±18°C (trial A).