Influence of sampling procedure, sampling location and skin contamination on skatole concentrations in adipose tissue of pigs

Raffael Wesoly, Volker Stefanski, Ulrike Weiler

Institute of Animal Husbandry and Animal Breeding
Department of Behavioral Physiology of Farm Animals
UNIVERSITY of HOHENHEIM

Skatole concentrations

Variability along the carcass ?

Biasing influence of soiling ?

Effect of biopsy technique ?

Experimental strategy

Experiment 1: Monitoring of skatole concentrations along the carcass

Experiment 2: Quantification of transdermal diffusion of skatole

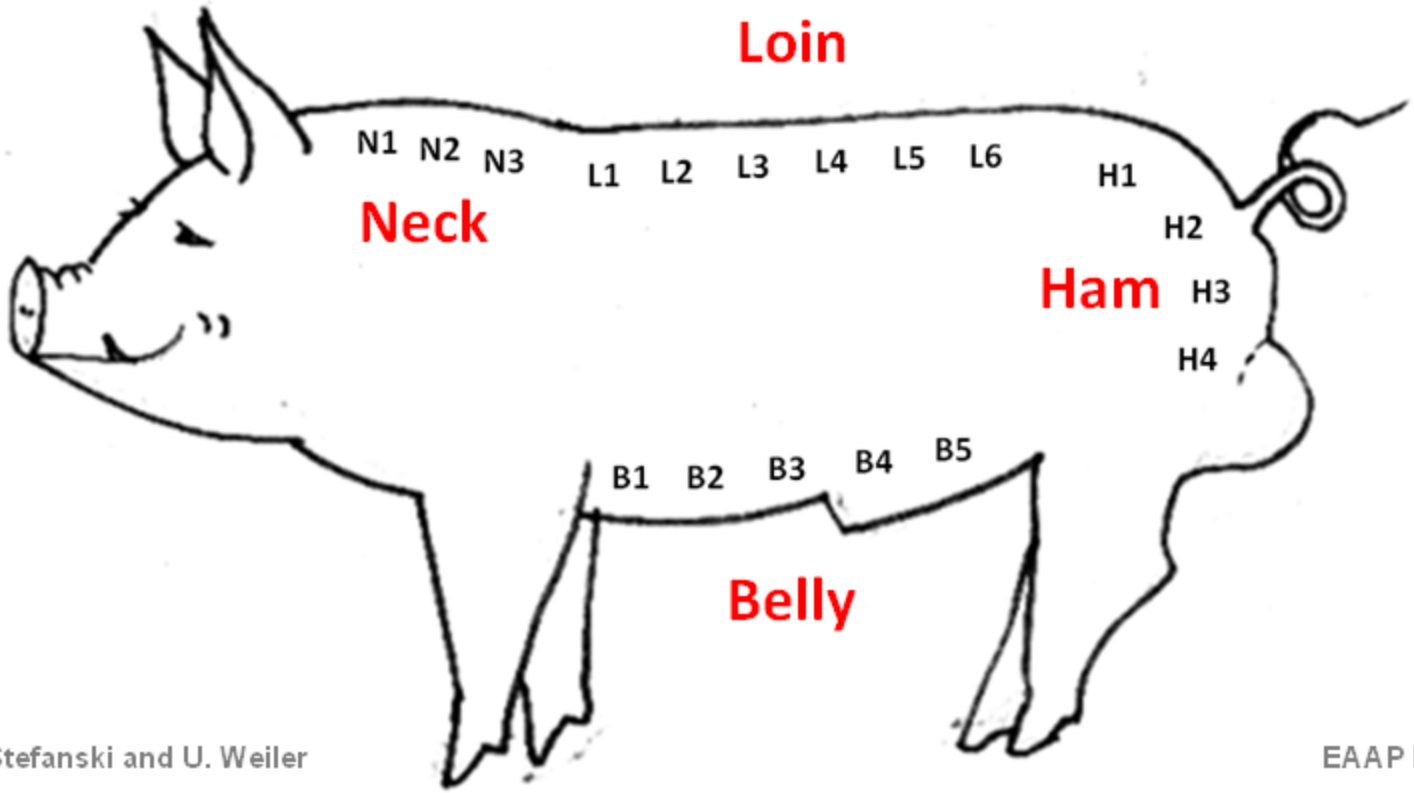
Experiment 3: Effect of sampling technique on skatole levels and endocrine parameter in blood

Monitoring of skatole

Animals: 8 GL-boars (180 – 200 kg)

Sampling: 36 samples/animal

Measurements: skatole concentrations (UPLC)



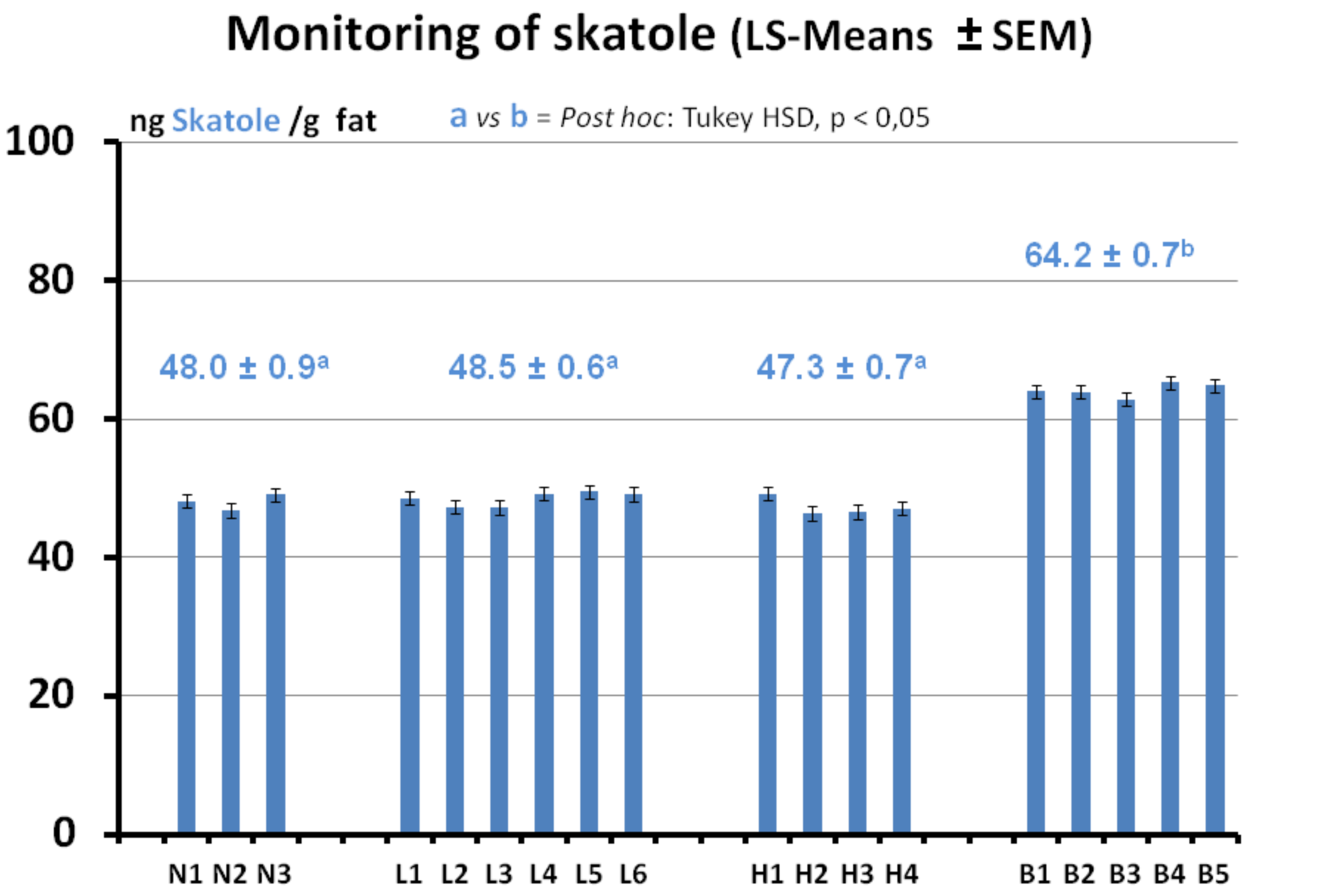
Monitoring of skatole

ANOVA: Significant effect of individual, sampling location and carcass side

Effect of carcass side:

	LS-Means ± SEM		
	left side (n=144)	right side (n=144)	Sign.
Skatole (ng/g)	50.5 ± 0.51	53.5 ± 0.51	p<0.001

Results Experiment 1:



Transdermal diffusion of skatole

Animals: 6 GL x Pi - barrows (200 kg)

Treatment: topical application (5x5 cm) of 25 g spiked faeces twice/day for 7d

(spiked faeces (HSF): 455.2 µg skatole/g)

Samples: day 0: punch biopsy from neck (control 1)

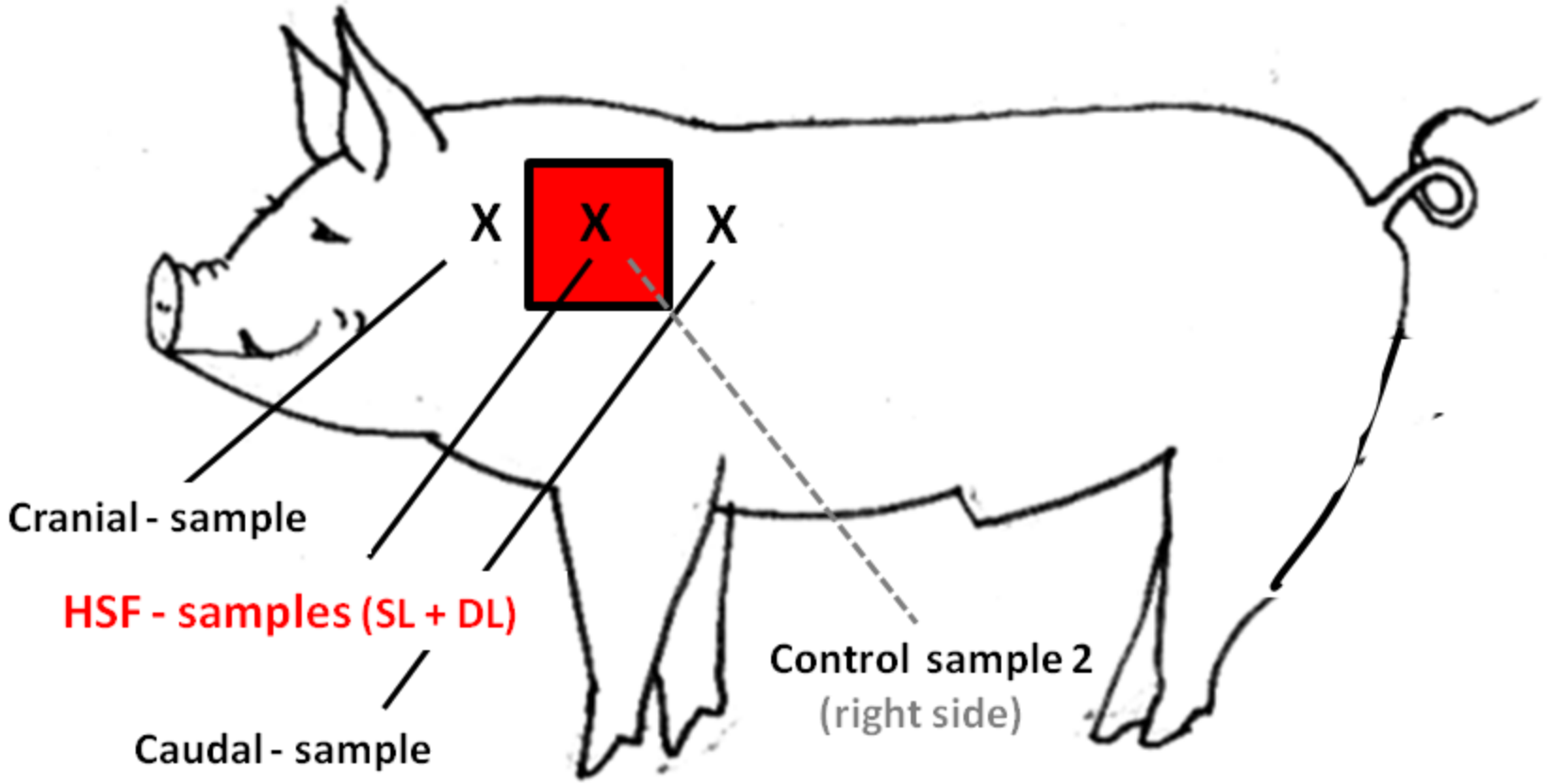
day 7: euthanization and sampling

treatment side: HSF-samples (two layers) cranial and caudal HSF

contralateral side cleaned twice/daily (50% EtOH) for 7d (control 2)

Measurements: skatole in fat samples (UPLC)

Transdermal diffusion of skatole



Transdermal diffusion of skatole

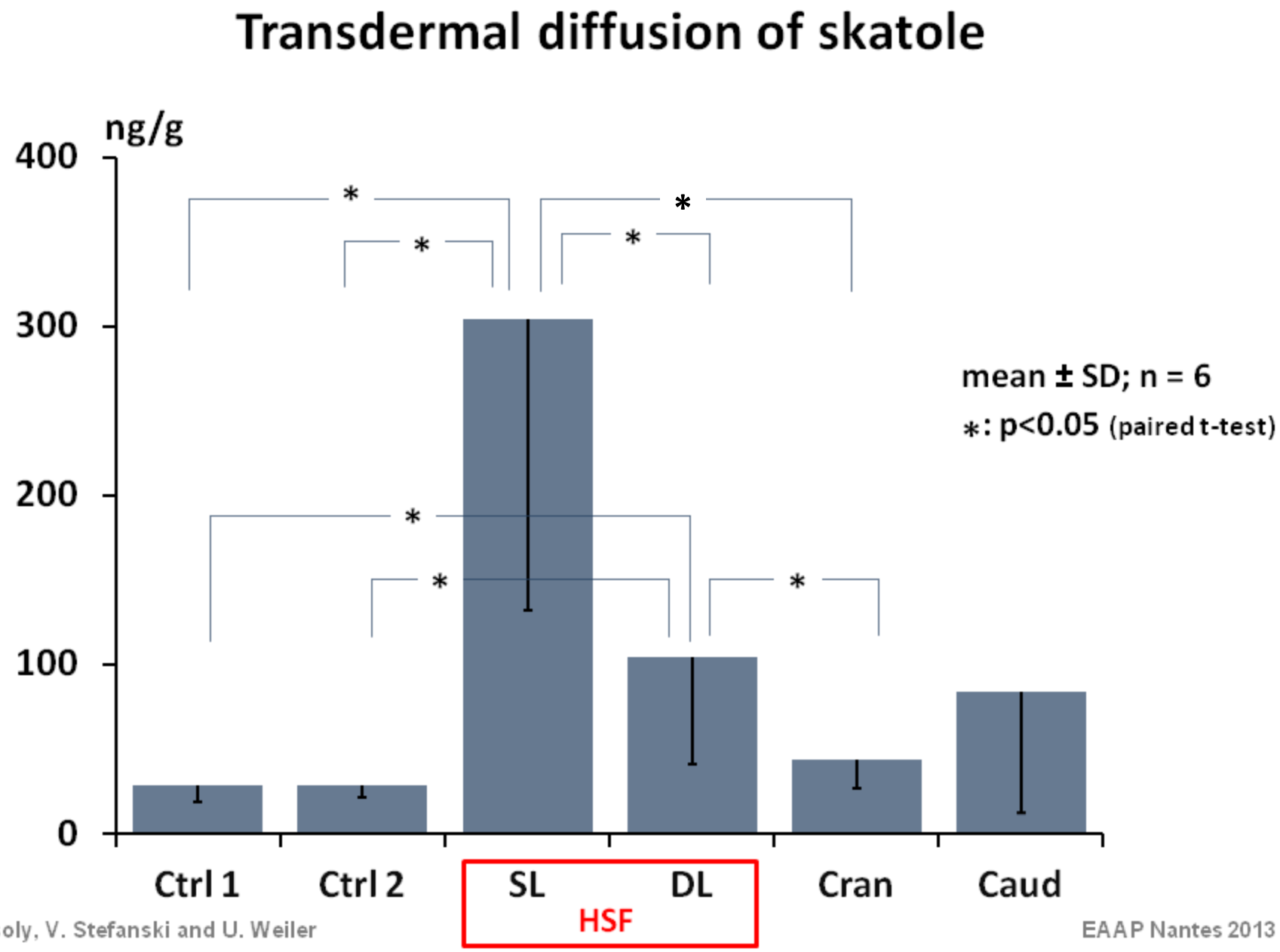
Animals: 6 GL x Pi - barrows (200 kg)

Treatment: topical application (5x5 cm) of 25 g spiked faeces twice/day for 7d
(spiked faeces (HSF): 455.2 µg skatole/g)

Samples: day 0: punch biopsy from neck (control 1)
day 7: euthanization and sampling
treatment side: HSF-samples (two layers) cranial and caudal HSF
contralateral side cleaned twice/daily (50% EtOH) for 7d (control 2)

Measurements: skatole in fat samples (UPLC)

Results Experiment 2:



Effect of sampling technique

Animals: 4 GL x Pi - barrows (120 kg)

Treatments: surgical biopsies under total anaesthesia in weekly intervals (6 per animal)

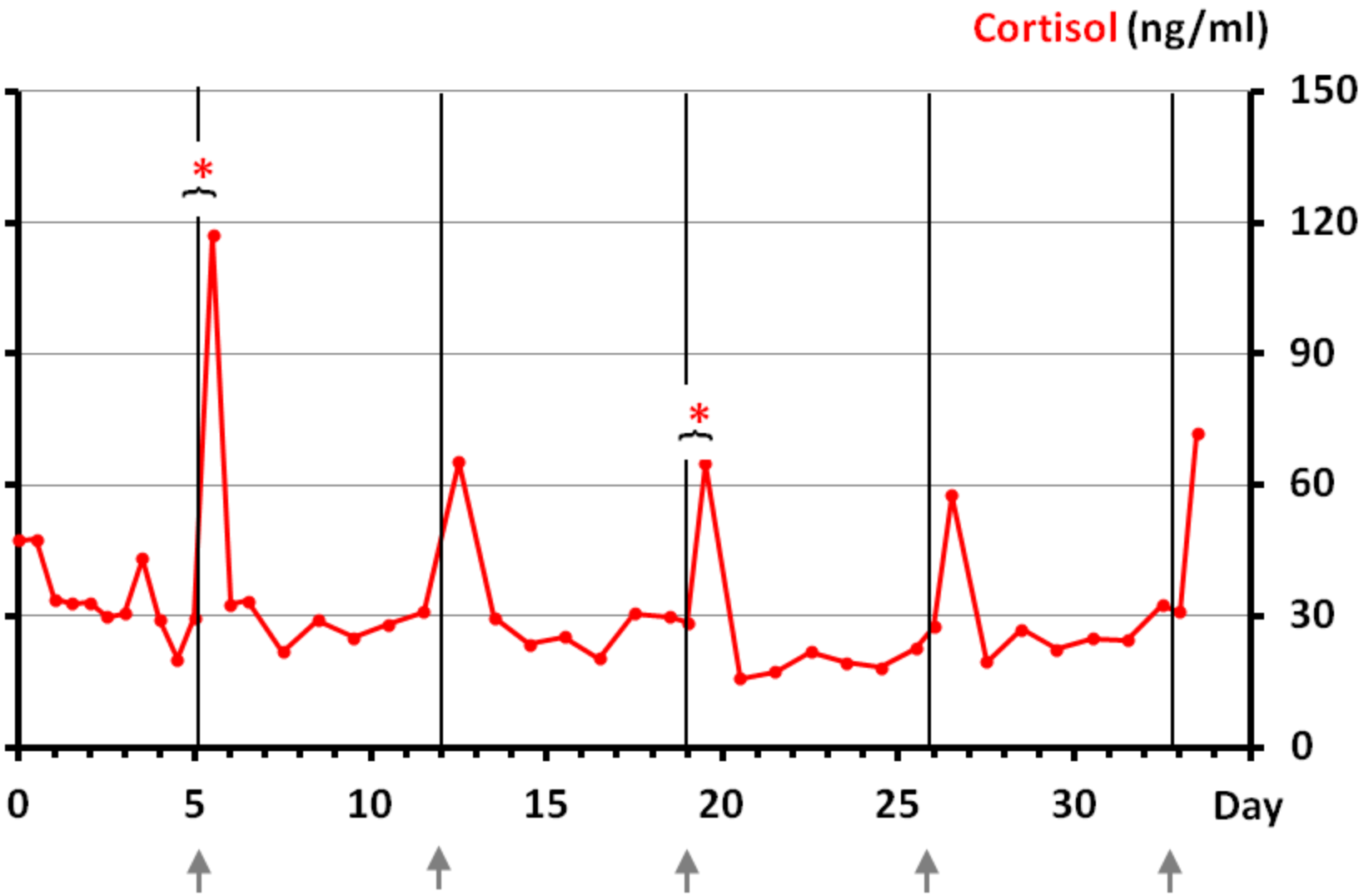
punch biopsy (conscious, 1 per animal)

Blood sampling : twice daily (jugular vein catheters)

additionally 7 samples before and after punch biopsy (- 5 min to + 480 min)

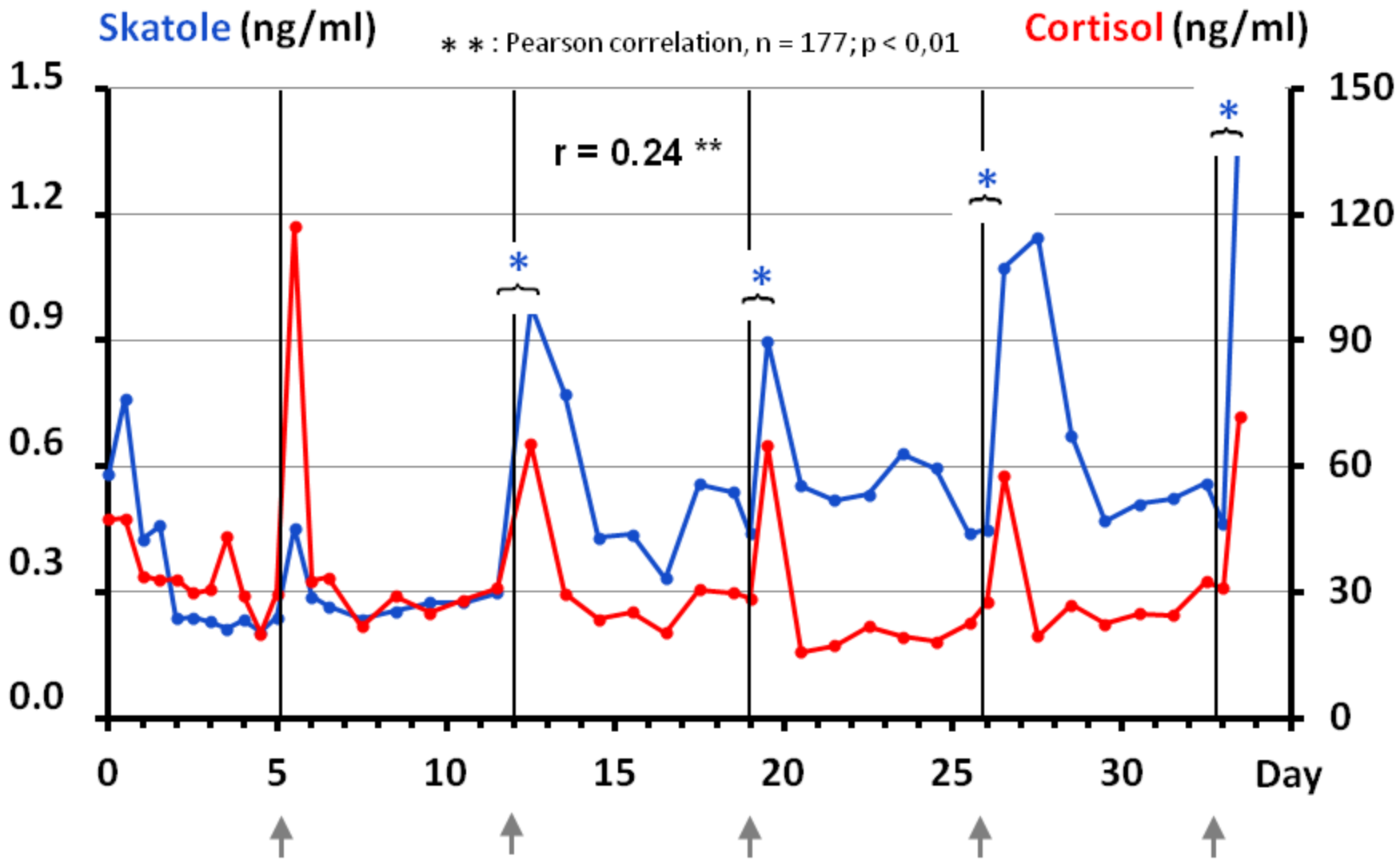
Measurements: skatole (UPLC) and cortisol (RIA) in blood plasma

Influence of sampling procedure – surgical biopsy

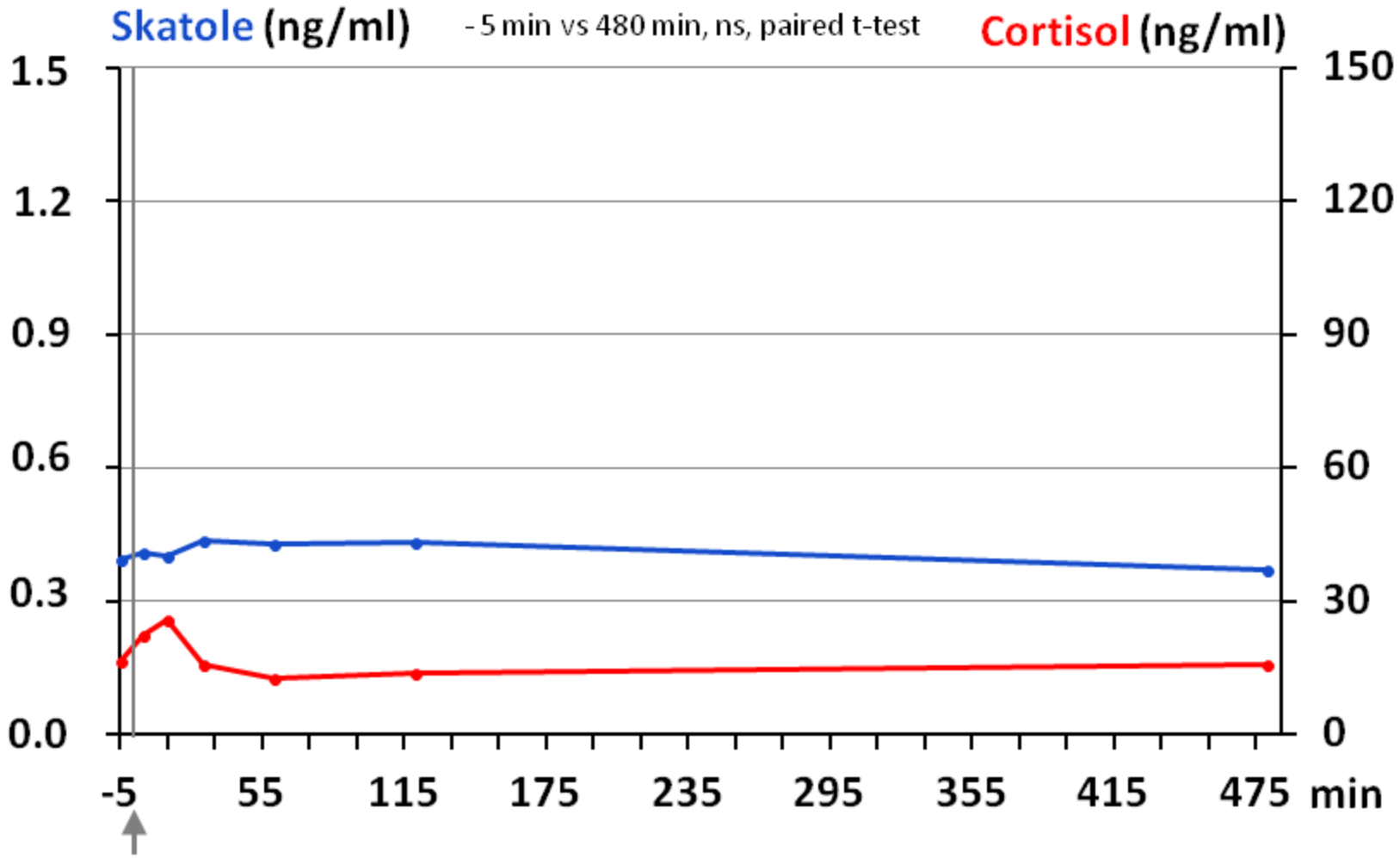


* : p<0.05 (paired t-test)

Influence of sampling procedure – surgical biopsy



Influence of sampling procedure – punch biopsy



Conclusions

- **Low variability of skatole concentrations in dorsal adipose tissue ⟶ reliable information from one sample**
- **Transdermal diffusion of skatole confirmed ⟶ only local effects on concentrations in fat**
- **Punch biopsy does not affect skatole or cortisol concentrations in blood ⟶ no sampling effect**

Thank you!