

Effects of suckling on milk yield and milk composition in dam rearing systems

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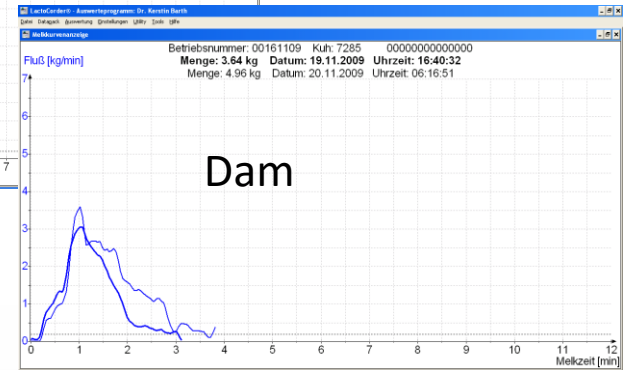
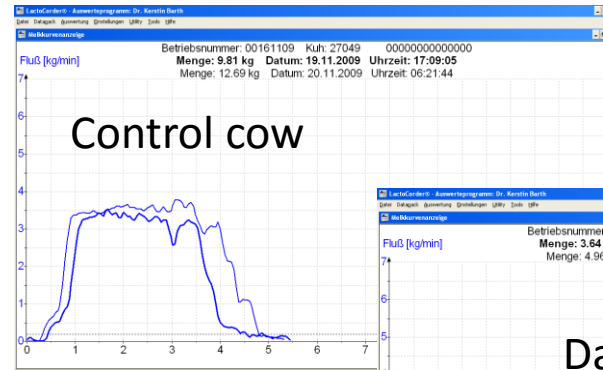
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Cow-calf contact reduces machine milk yield



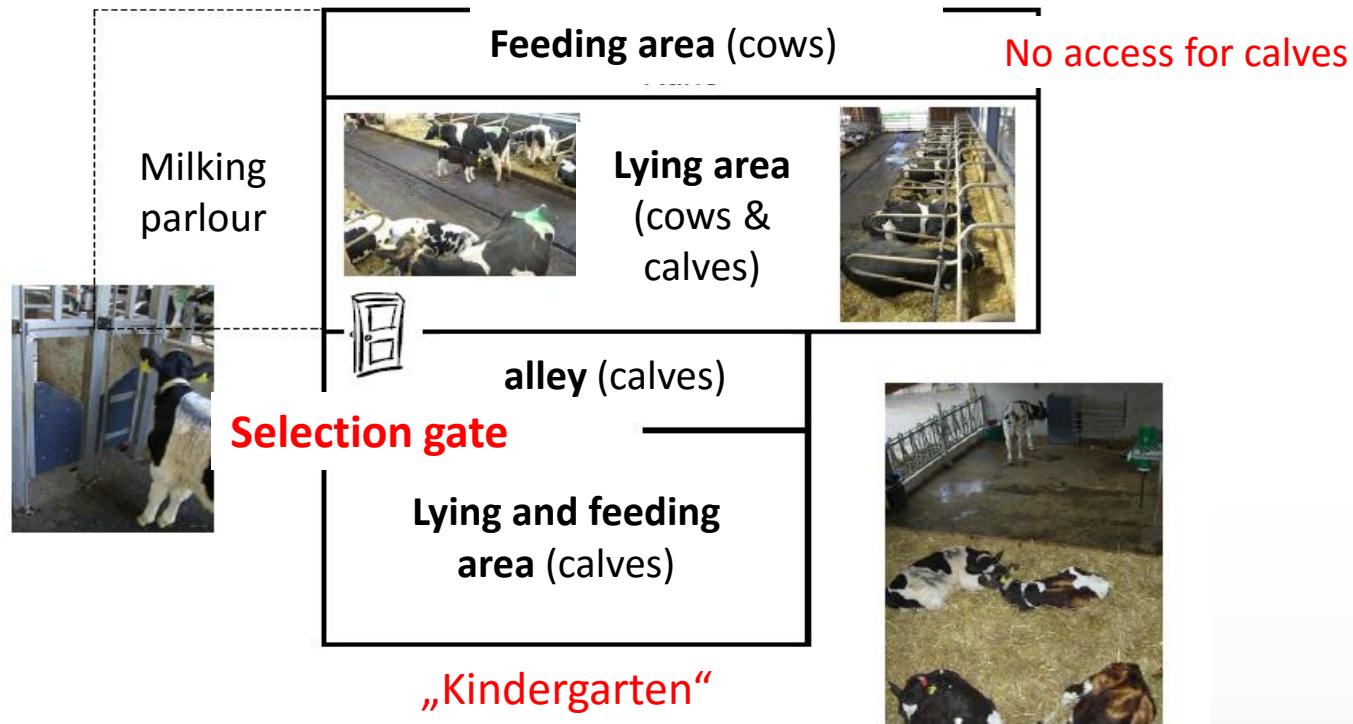
Suckling



Impaired alveolar milk ejection

- Effects on milk composition?
- Long-term effects on lactation?

Experimental freestall barn (2 x 50 cubicles)



Research since 2002 in collaboration with:

- Edna Hillmann (HU Berlin/ETH Zürich)
- Susanne Waiblinger (VetmedUni Vienna)
- Katharina Zipp & Ute Knierim (University of Kassel).....and many PhD-, MSc- and BSc-students

Material and Methods

Exp.		Treatment [n]			
		Control	2x daily (15' before milking)	Night (18:30 – 05:00)	Permanent
1	<i>Roth et al. (2009) J. Appl. Anim. Behav. Sci. 119, 137-142</i>	x [27]	x [15]		x [14]
2	<i>Wagner et al. (2013) J. Appl. Behav. Sci. 147, 43-54</i>	x [19]			x [21]
3	<i>Zipp et al. (2016) J. Appl. Behav. Sci. 180, 11-17</i>	x [24]			x [19]
4	<i>Barth et al. (2015) Current research in appl. ethology, KTBL-510, 139-147</i>	x [19]		x [18]	

- **cows with calf contact:** 7 days together in calving pen
weaning: between day 93 - 99
- **control cows:** separation within 24 hours after birth
- **milking:** 2x daily (05:30 and 16:00)
2x4 tandem parlour (automatic stimulation/stripping/cluster removal)
- **milk recording:** monthly, Metatron 21
- **analyses:** fat, protein, SCC (Landeskontrollverband Schleswig-Holstein)

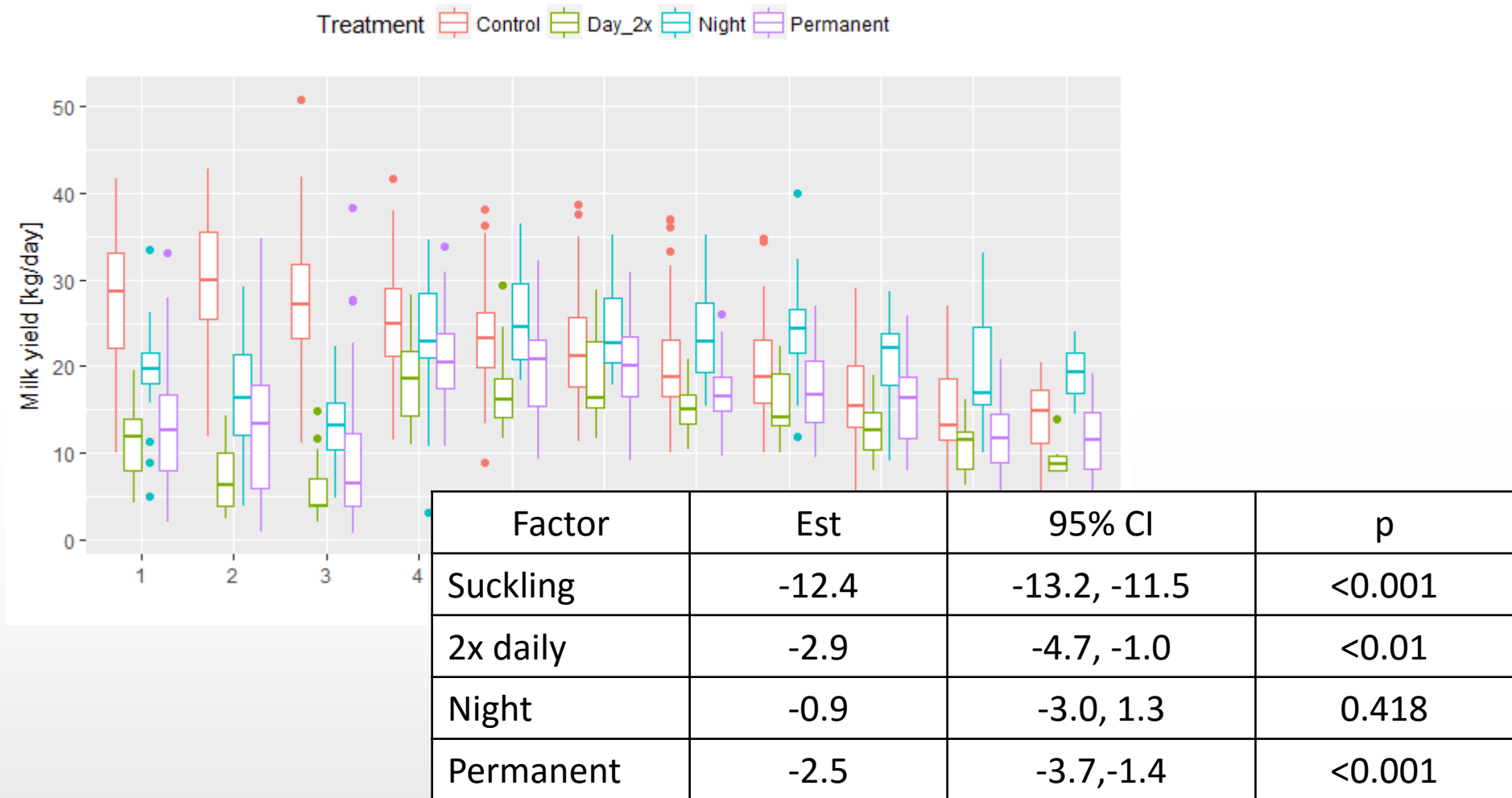
Statistical analyses

- Linear mixed effect models
- R version 3.3.3

Fixed Effects:	treatment	control/day_2x/night/permanent
	suckling	yes/no
	parity status	primipar/ multipar
	breed	German Holstein/German Red Pied
	DIM	
Random Effects:	DIM	
	experiment	
	cow	

- (correlation structure: first order autoregressive model)

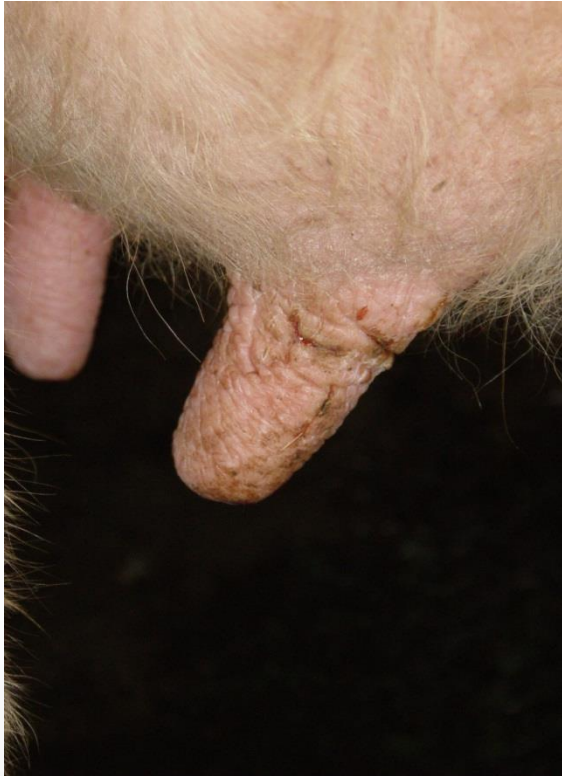
Results – Milk yield [kg/d] compared to control group



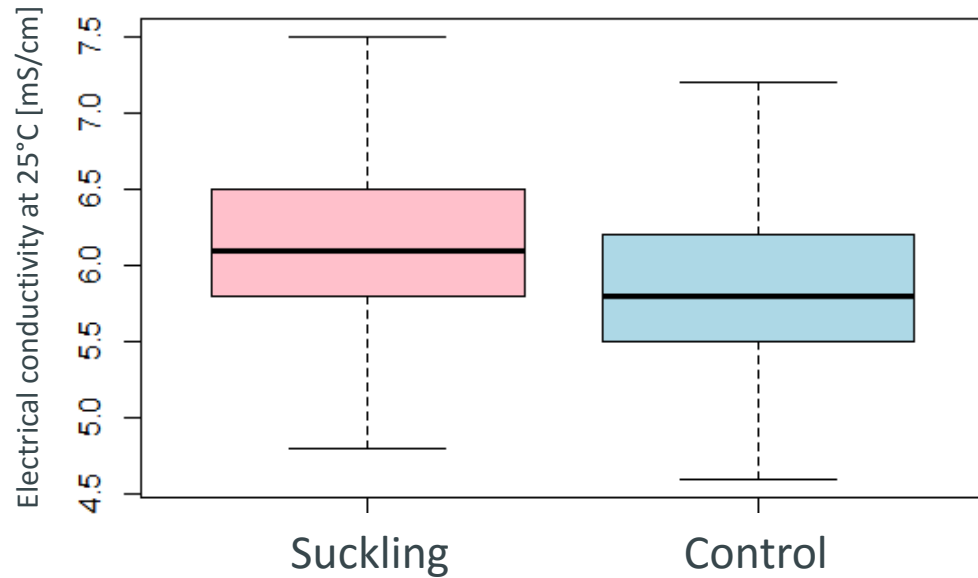
Results – Effects on milk composition

Content	Factor	Est	95% CI	p
Fat [%]	Suckling	-0.72	-0.84, -0.60	<0.001
	2x daily			n.s.
	Night			n.s.
	Permanent			n.s.
Protein [%]	Suckling	0.09	0.04, 0.14	<0.001
	2x daily			n.s.
	Night			n.s.
	Permanent	0.06	0.00, 0.13	0.0732
SCC [1,000 cells/mL]	Suckling	12	11, 13	0.0342
	2x daily			n.s.
	Night			n.s.
	Permanent			n.s.

Mechanical stress due to suckling



- often reported in foster cow systems
- increased electrical conductivity in quarter foremilk



Suckling during the first 3 months of lactation

- affects milk yield throughout lactation in pure dam rearing systems (cow:calf-relation = 1:1)
 - time of contact seems to be important → further research
- reduces fat content during suckling period → impaired milk ejection
- increases protein content → further research
- affects SCC marginally in suckling period

Thank you for your attention!

