



SCIENCE AND
EDUCATION **FOR**
SUSTAINABLE
LIFE

Water intake and productivity responses of lactating dairy cows offered saline drinking water

L. Managos¹, S. Agenäs¹, M. Åkerlind², P. Peetz Nielsen³ & A. Jansson¹

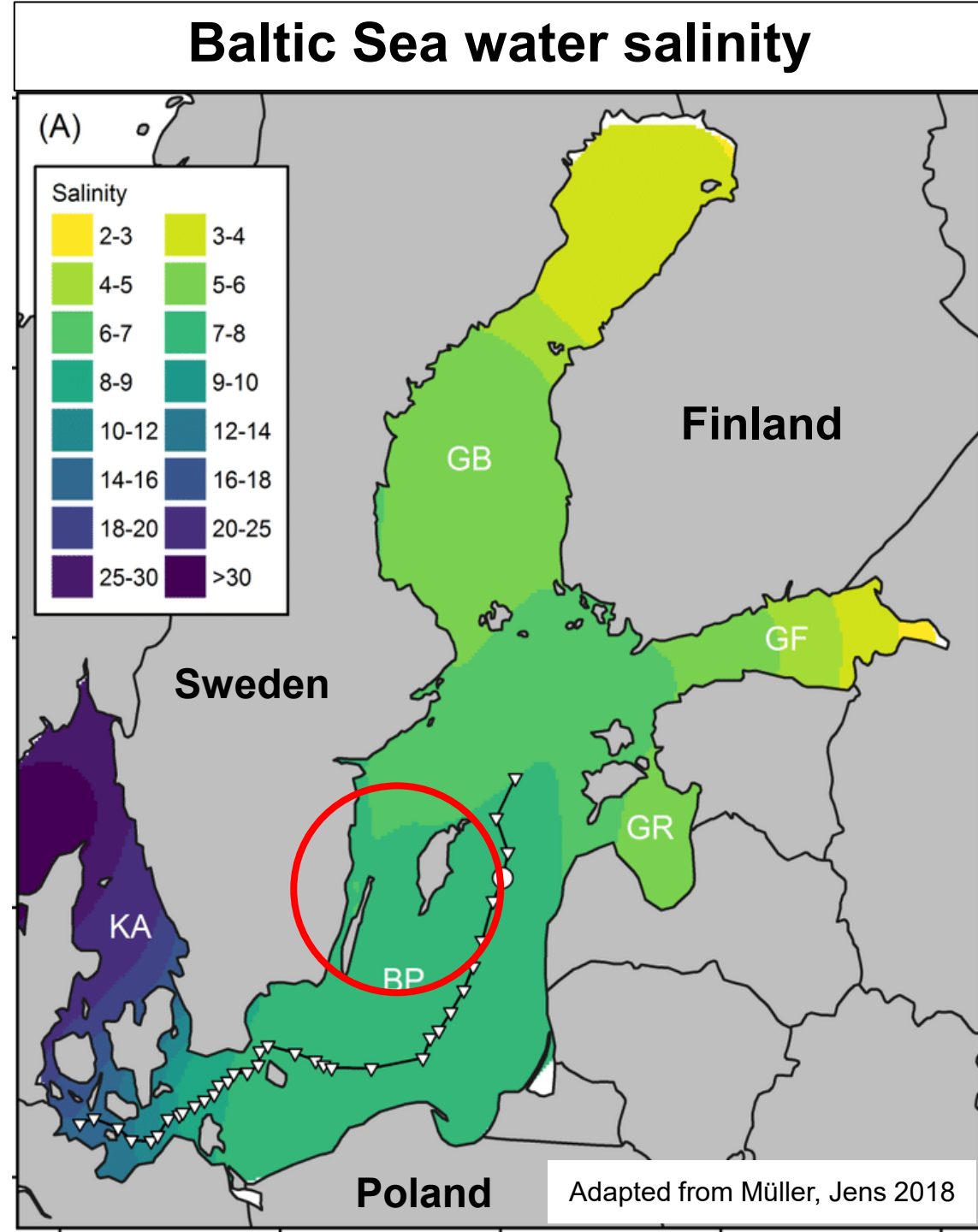
¹ Swedish University of Agricultural Sciences

² Växa, Sweden

³ RISE Research Institute of Sweden

Background

- Water scarcity and droughts
- Need for alternative water resources for cattle
- Use of brackish water from the Baltic Sea
 - Standard farming practice in Sweden during the summer months
 - Beef cattle, heifers, and dry cows



Aim & hypothesis

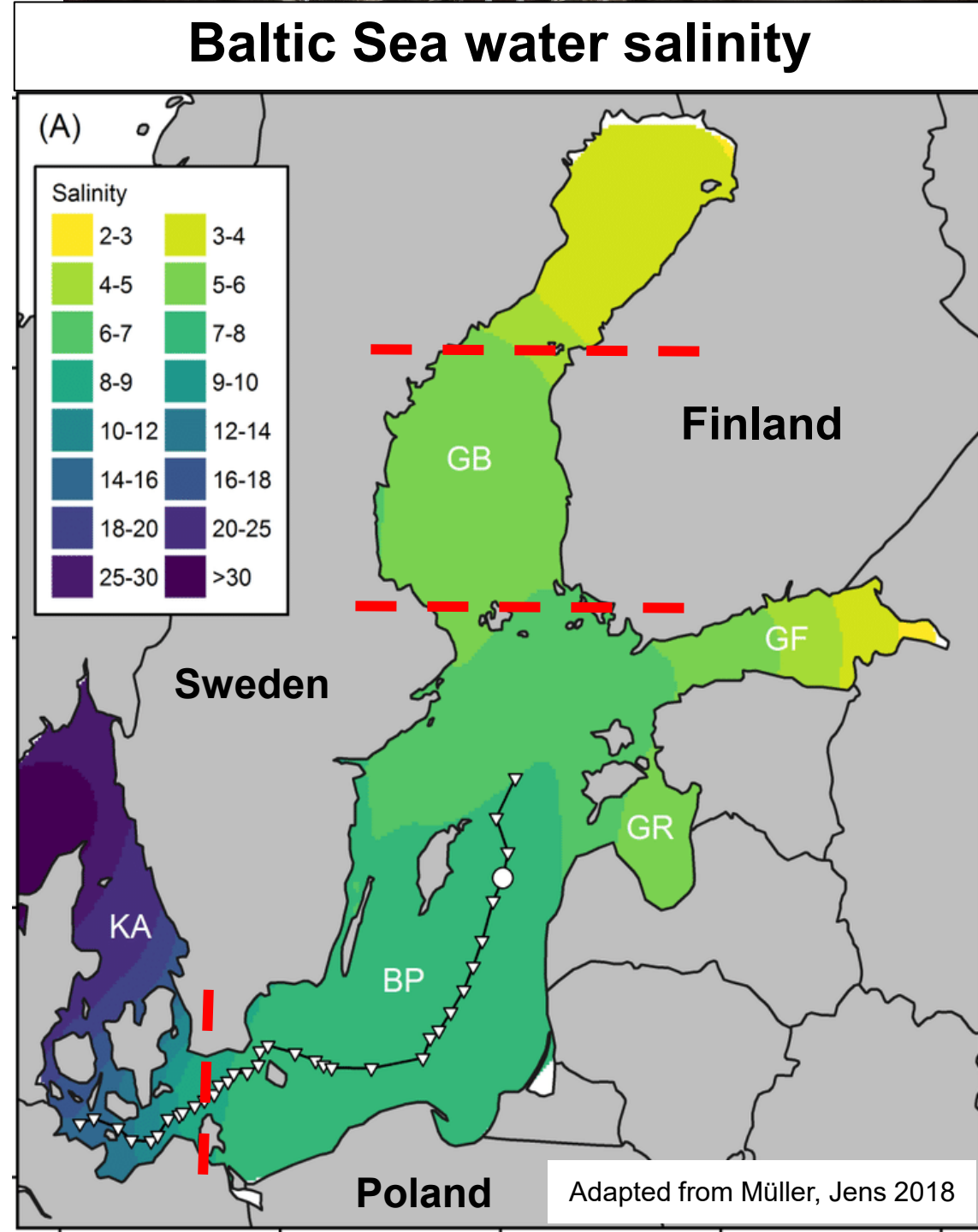
- To investigate the effect of saline drinking water on milk production and physiological responses in high-yielding dairy cows
- Reduced need for groundwater without affecting production and welfare



Cow tasting the saline water

Materials & methods

- 18 multiparous, post-peak lactation dairy cows (DIM: 208 ± 18)
- Unbalanced latin-square design
 - Divided into three groups
- Three treatments (each 14 days long)
 - Control (< 1 g/L)
 - Low salinity (4 g/L)
 - High salinity (8 g/L)

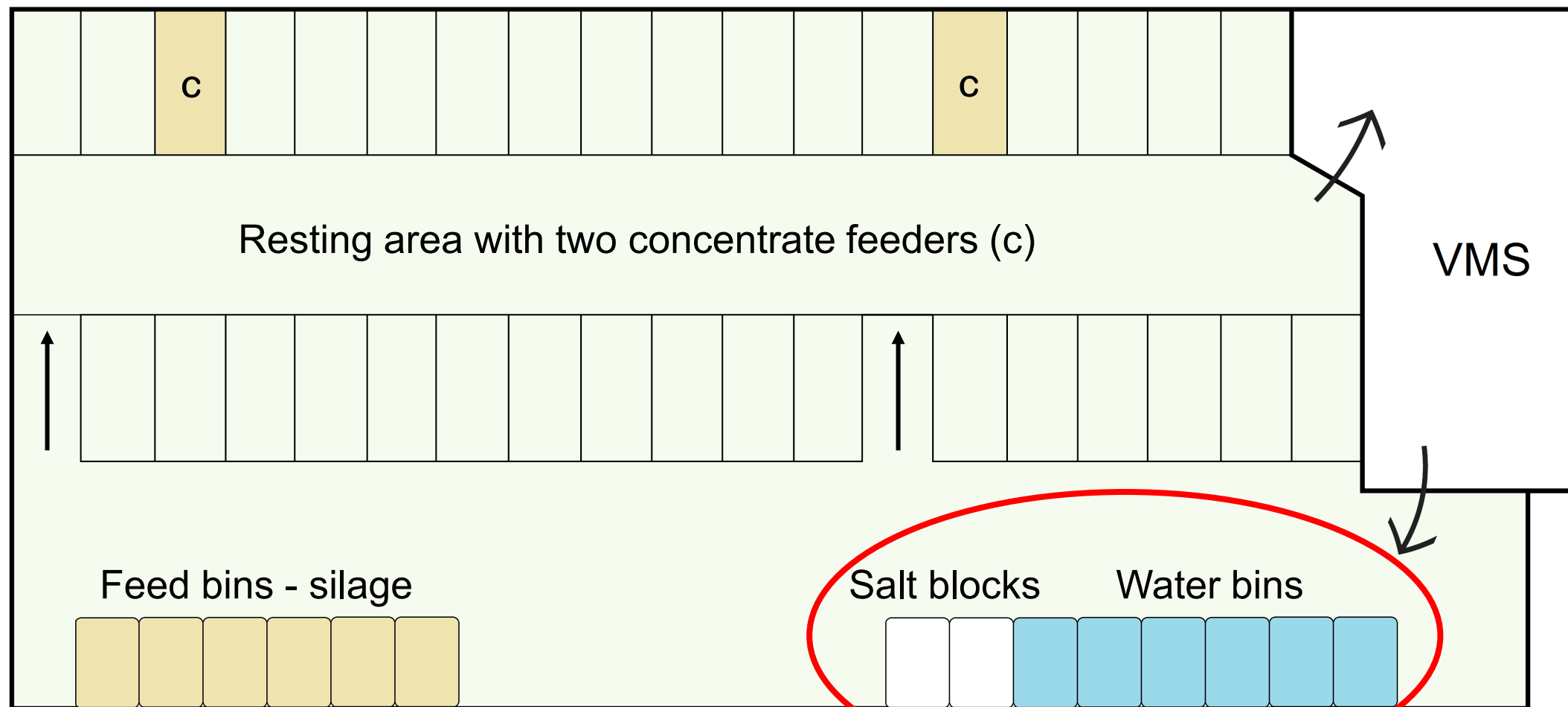


Materials & methods

- 18 multiparous, post-peak lactation dairy cows (DIM: 208 ± 18)
- Unbalanced latin-square design
 - Divided into three groups
- Three treatments (each 14 days long)
 - Control (< 1 g/L)
 - Low salinity (4 g/L)
 - High salinity (8 g/L)
- Voluntary milking system (VMS)
- Blood, milk, urine and faecal samples
- Individual water and feed intake



Materials & methods



Free-stall pen layout (adapted from Claire Wegner, SLU)

Results

	Treatment			SEM	P-value
	Control (< 1g/L)	Low (4 g/L)	High (8 g/L)		
Water intake (Kg/d)	96^c	113^b	148^a	4.2	< 0.001
DMI (Kg/d)	24.2	24.3	23.6	0.29	0.858
Milk yield (Kg/d)	33.4	34.1	33.9	0.46	0.058

DMI: Dry Matter Intake

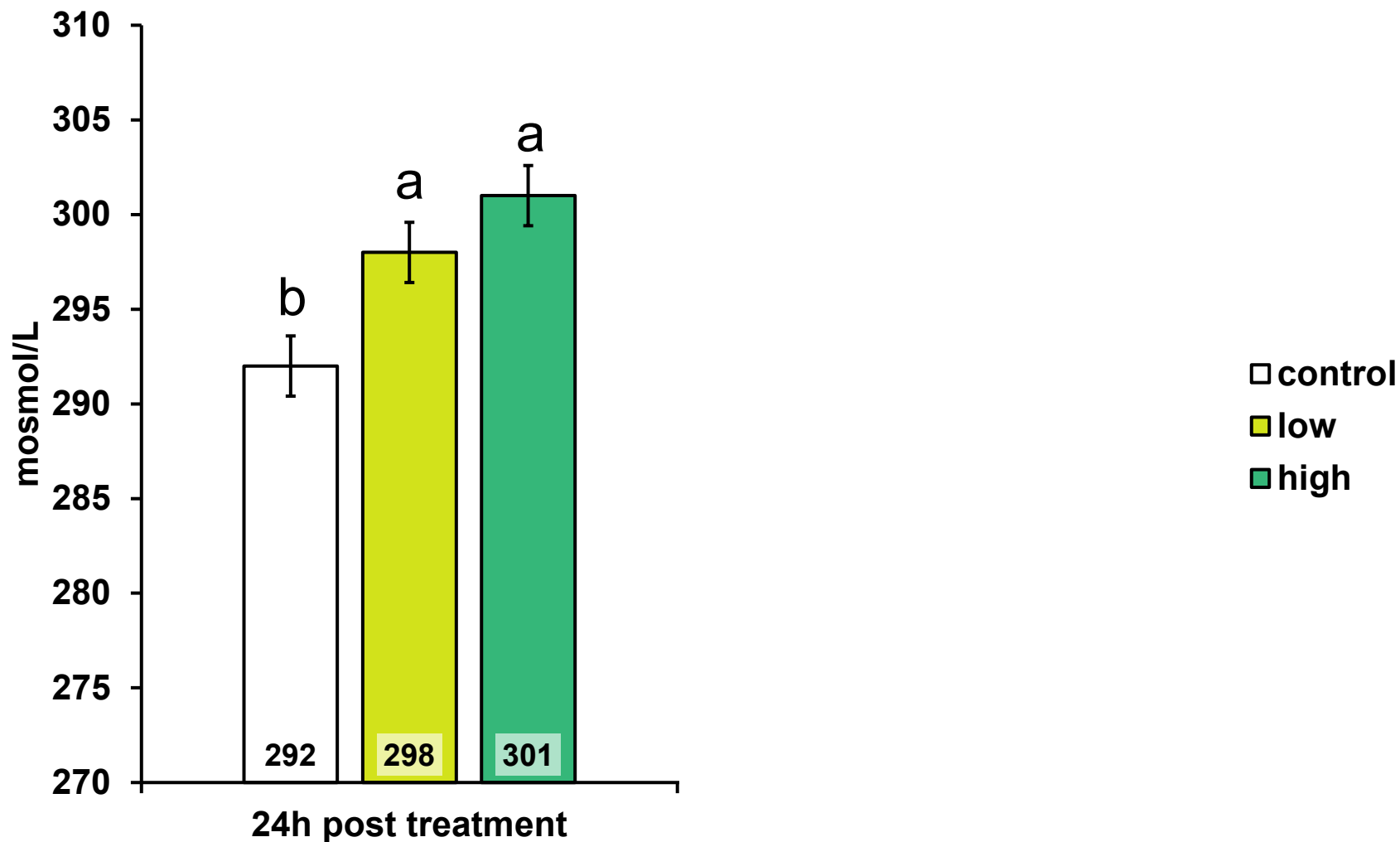
Results

	Treatment			SEM	P-value
	Control (< 1g/L)	Low (4 g/L)	High (8 g/L)		
ECM (Kg/day)	43.9	44.4	43.9	1.15	0.902
ECM per DMI	1.85	1.76	1.97	0.09	0.076

ECM: Energy Corrected Milk
DMI: Dry Matter Intake

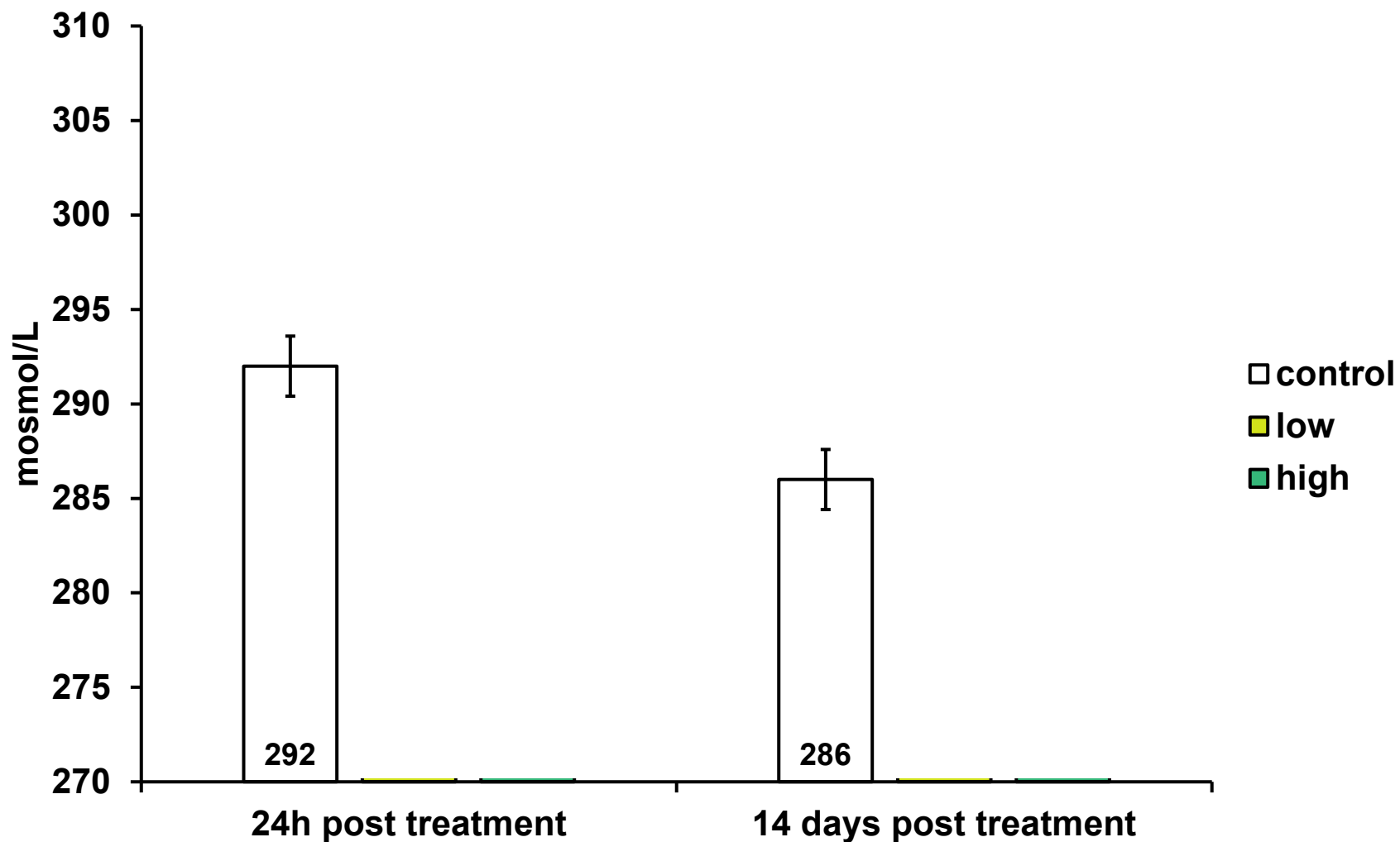
Results

Blood plasma osmolality



Results

Blood plasma osmolality



Conclusion

- Saline drinking water affected blood plasma osmolality in the first 24 hours of the treatment
- Plasma osmolality after 14 days post-treatment exposure shows good adaptation to the low and high treatment (4 and 8 g/L)
- No effect on milk production

Thank you for your attention! Questions?

Lea Managos
lea.managos@slu.se

FORMAS 



SCIENCE AND
EDUCATION
**FOR
SUSTAINABLE
LIFE**