



75th EAAP Annual Meeting 2024
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Optimizing lactation performance of hyperprolific sows through *Scutellaria baicalensis* supplementation

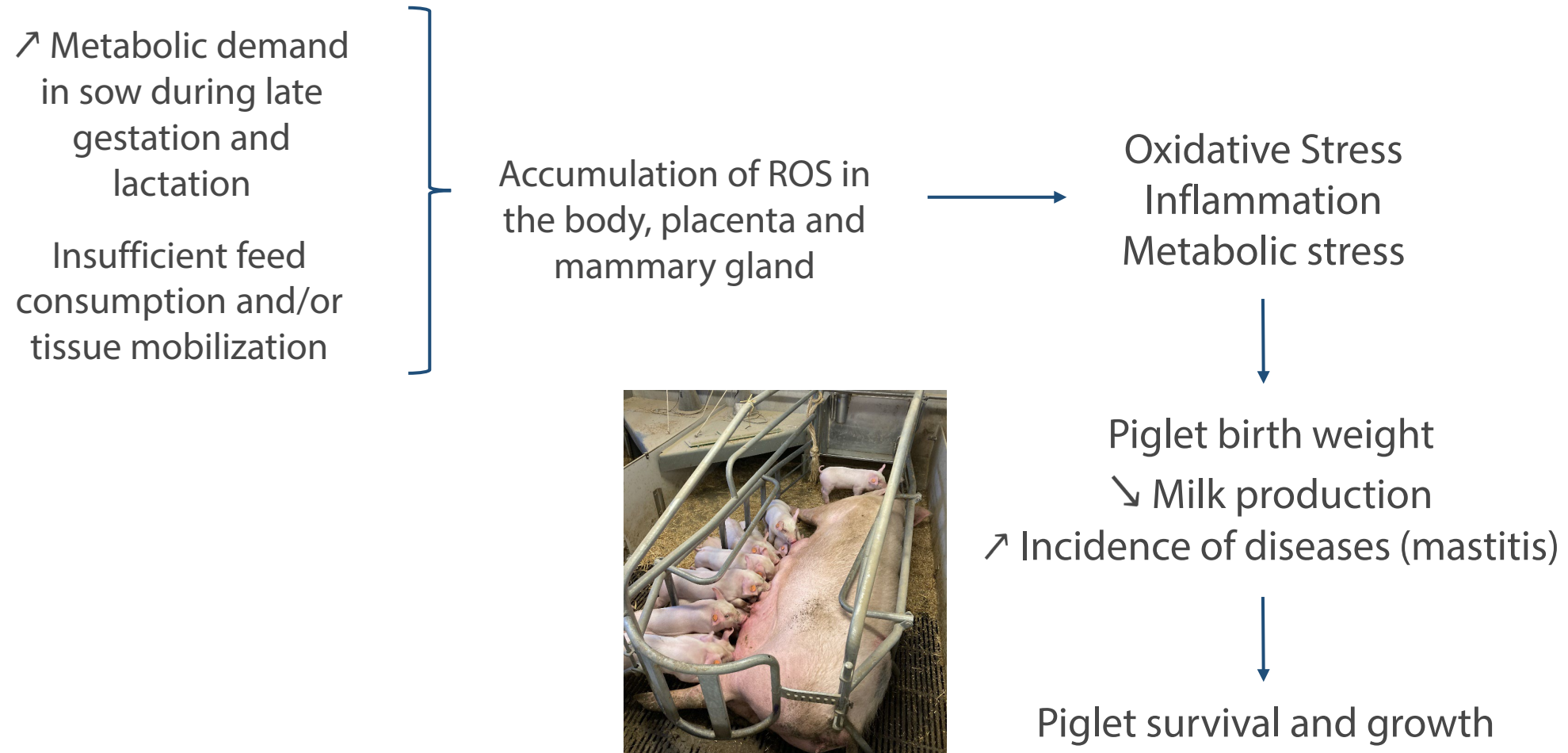
D. Gardan-Salmon, A. Hamard, F. Robert, J. V. Nørgaard, and T. Feyera



Our expertise, your efficiency

Session 78 "Collaboration in experimental research for sustainable pig production (with PIGWEB)"

Hyper-prolific sows - late gestation and lactation



Scutellaria baicalensis potentials for improving lactation efficiency

- ✓ *Scutellaria baicalensis* (SB) → bioactive flavonoids such as baicalin and baicalein
- ✓ Anti-inflammatory, antioxidative, and hepatoprotective properties (Yin *et al.*, 2021; Wang *et al.*, 2022)
- ✓ Increased milk yield in dairy cows and antioxydant effects on bovine mammary cells (Olagaray *et al.*, 2019; Perruchot *et al.*, 2019)
- ✓ Stimulation of sow primary mammary epithelial cell proliferation at low dose and ∨ ROS in vitro (Perruchot *et al.*, 2019 EAAP)



Hypothesis

Scutellaria baicalensis (SB) would enhance sow and mammary gland health, leading to improved milk production and piglet growth

Objectives

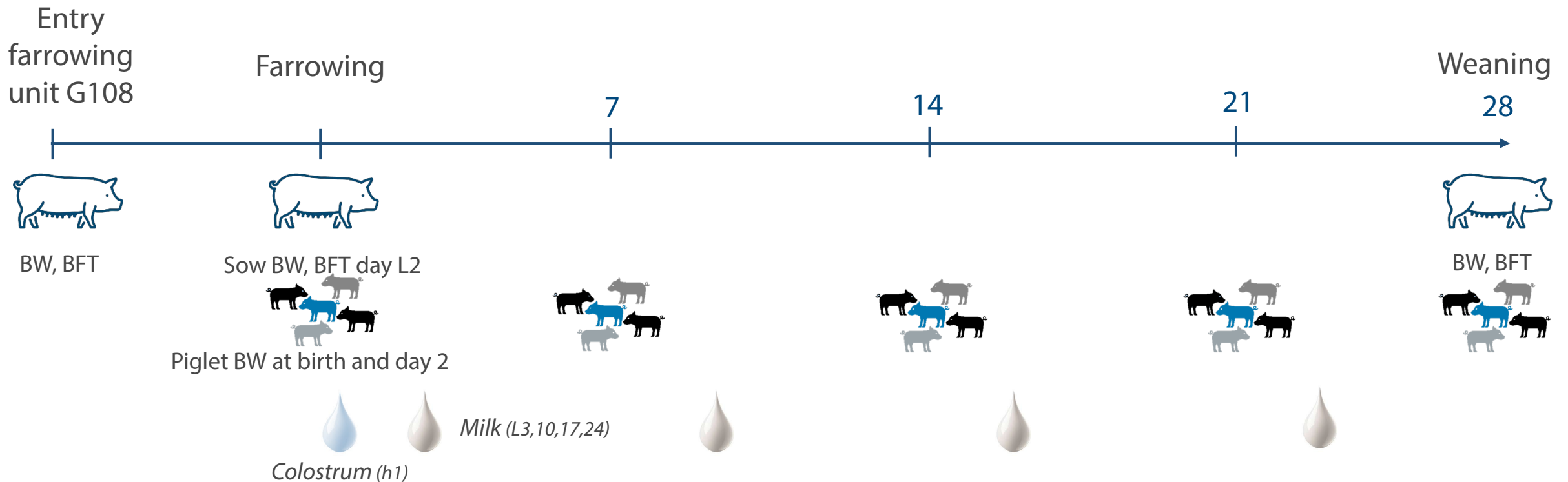
- Investigate the effects of SB supplementation in sow lactation diet on **sow performances** and **milk** production and quality
- Assess the impact on **litter survival** and **growth**

Materials and methods

- DanBred Landrace x DanBred Yorkshire sows (2-4 parity)
- **Control** and ***Scutellaria Baicalensis* (SB; 0.2% FeedStim® Sow)** (n=12)
- Litters were equalized to 14 piglets/sow, 24-36h after onset farrowing



Trial
duration
5 weeks



Materials and methods (2)

- ✓ **Sow Feed intake** recorded weekly
- ✓ **Litter weight in lactation** calculated weekly from day 2 of lactation (equalization) to weaning
- ✓ **Milk yield** estimated using Hansen *et al.* (2012) prediction model
- ✓ **Chemical analyses** on **colostrum and milk** (weekly for milk)
- ✓ Statistical models (SAS, Mixed procedure) included Diet, Parity, Diet * Parity, Week in lactation, Sow as random effect; LSMeans presented

Productive and reproductive performances

- ✓ No effect of the diet on sow BW, BFT or feed intake (ADFI: 3.7kg end of gestation, 6.93 kg in lactation)

	Control	SB	<i>SEM</i>	Diet
Total born	22.1	23.5	<i>1.16</i>	0.57
Live born	20.9	21	<i>0.87</i>	0.78

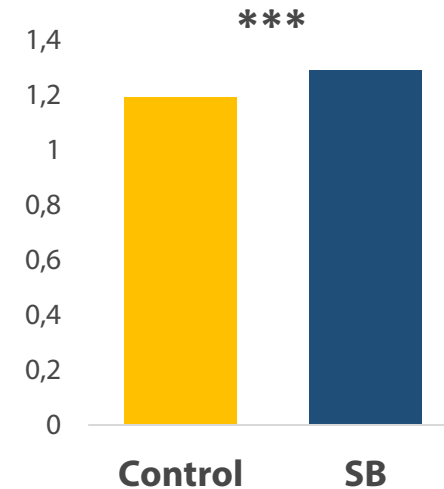
- ✓ No significant effect on the number of live born piglets

Productive and reproductive performances

- ✓ No effect of the diet on sow BW, BFT or feed intake (ADFI: 3.7kg end of gestation, 6.93 kg in lactation)

	Control	SB	SEM	Diet
Total born	22.1	23.5	1.16	0.57
Live born	20.9	21	0.87	0.78
Piglet birth weight (kg)	1.16	1.26	0.02	0.002
Live born piglet birth weight (kg)	1.19	1.29	0.02	<0.001
Piglet birth weight (equalization) (kg)	1.33	1.43	0.02	<0.001

Piglet birth weight



- ✓ **Higher birth weight with SB ($P<0.001$)**, in accordance with Fang *et al.* (2023)

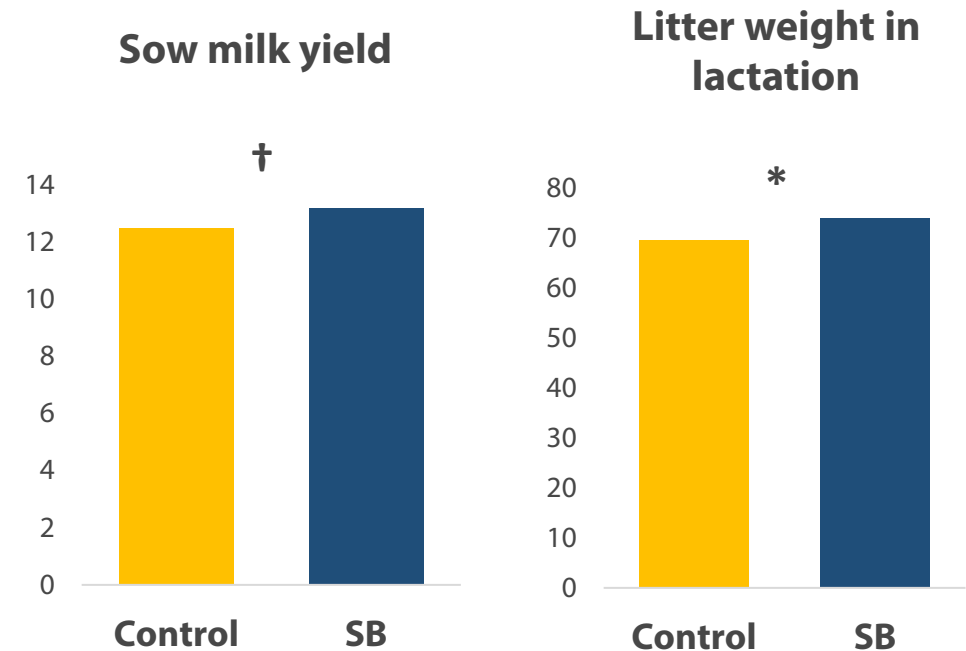
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Piglet birth weight (equalization) (kg)	1.33	1.43	0.02	<0.001
Litter weight at day 2 of lactation (kg)	20.7	22.4	0.66	0.13
Litter weight at weaning (kg)	104	111	4.1	0.22
Weaning individual weight (kg)	8.66	8.74	0.12	0.47

Sow milk yield and litter performances

	Control	SB	SEM	Diet
Sow milk yield (kg)	12.5 ↗	13.2	0.33	0.06
Litter size in lactation	12.6	13.1	0.18	0.08
Litter survival in lactation (%)	90.6	93.4	1.24	0.10
Litter weight in lactation (kg)	69.6 ↗	74.1	1.52	<0.05



- ✓ **Higher milk yield with SB (P=0.06)** in accordance with Olagaray et al., 2019
- ✓ Trend for higher survival rate with SB
- ✓ **Higher litter weight in lactation (P<0.05)**

Colostrum and milk concentrations

	Control	SB	SEM	Diet
<i>Colostrum, %</i>				
Fat	4.65	5.19	0.32	0.2
Protein	20.4 ↘	18.2	0.55	< 0.01
Lactose	3.4 ↗	3.56	0.05	< 0.05
Solid not fat	23.2 ↘	21.4	0.48	< 0.01
Dry matter	29.6	28	0.68	0.09



Colostrum

- Higher % of lactose and lower % protein with SB

Colostrum and milk concentrations

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Lactose	3.4 ↗	3.56	0.05	<0.05
Solid not fat	23.2 ↘	21.4	0.48	<0.01
Dry matter	29.6	28	0.68	0.09
<i>Milk, %</i>				
Fat	7.14 ↘	6.63	0.14	<0.01
Protein	5.0	5.06	0.05	0.22
Lactose	5.08	5.09	0.02	0.80
Solid not fat	11.3	11.3	0.05	0.82
Dry matter	18.1 ↘	17.6	0.14	<0.05



Colostrum

- Higher % of lactose and lower % protein with SB



Milk

- Lower % of fat (Ariza-Nieto *et al.*, 2011; Herve *et al.*, 2023)
- No difference in % protein and lactose
- Improved milk yield in SB group associated with no change in protein and lactose, suggests better intake in piglets, and higher growth in SB (Hojgaard *et al.*, 2020)

Conclusion

- Supplementation with *Scutellaria baicalensis* in sows increased:
 - ✓ Piglet weight at birth
 - ✓ Sow milk yield
 - ✓ Litter growth during lactation
- Positive impact of *Scutellaria baicalensis* on improving lactation efficiency in hyperprolific sows
- Further research needed to better understand the mechanisms by which SB impacts:
 - Fetal development on late gestation
 - Milk composition



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Thank you for your attention

