

# **Book of Abstracts**

**of the 76th Annual Meeting  
of the European Federation of Animal Science**



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## Session 55

## Theatre 10

Effect of supplementation of Iberian lactating sows with betaine or amino acids on the nutritional composition of milk and its redox status under heat stress conditions

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Lactating sows are particularly vulnerable to heat stress due to the high metabolic rate associated with milk production. Heat stress during lactation could affect sow's metabolic state, the quantity and quality of the milk and consequently the proper development of the litter. The effects of supplementing lactating Iberian sows from day 70<sup>th</sup> of pregnancy onwards with betaine (BET; n=15) or amino acids (AA; n=13; arginine + valine) as nutritional strategies to mitigate heat stress was evaluated against a non-supplemented group (C; n=14). The effect was evaluated under heat stress (HS; n=18) and thermoneutral (NO-HS; n=24) conditions, in primiparous (P; n=21) and multiparous (M; n=21) sows. The average maximum temperature was 32.3°C for HS and 23.7°C for NO-HS. At 15 days postpartum, milk samples were collected and analysed for nutritional composition: total solids, protein, fat, ash, lactose, and energy content, as well as milk antioxidant capacity (FRAP) and lipid peroxidation (TBARS). The intake of lactating sows was measured daily and the average daily gain (ADG) of each piglets was recorded (n=407). The Statgraphics Centurion XVI package was used, and a multifactorial ANOVA was performed. The results showed that HS reduces the intake of the lactating sows (P<0.001) and decreased total solids, fat, and energy content and increased protein, ash, and lactose in milk (P<0.001). Furthermore, piglets under HS showed lower ADG (P<0.001). Milk in BET group had a higher percentage of fat, total solids, and energy content than C group (P<0.05). A treatment × parity interaction was observed, such that piglets from M sows supplemented with betaine had the highest ADG (P<0.05). Moreover, P sows showed higher antioxidant capacity than M sows, regardless of temperature or treatment (P<0.05). In conclusion, heat stress had a negative effect on milk quality and reduced litter average daily gain. Supplementation with BET could improve milk composition increasing energy and fat content. Funded by Spanish Ministry of Science and Innovation.

## Session 55

## Theatre 11

Effects of Pine-Derived Polyphenol Supplementation on Sow Performance, Milk Quality, and Piglet Growth

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Botanical extracts are increasingly being explored for their potential benefits in the search for sustainable and natural solutions in livestock nutrition. In a three-run experiment, OXILEM, a polyphenol-rich commercial pine extract, was supplemented at 1% from day 106 of gestation through lactation in 10 sows (OX), while another 10 received a control diet (CON). At weaning, 229 piglets were assigned to one of four dietary groups based on maternal and post-weaning diets (CON/CON, CON/OX, OX/CON, OX/OX), with OX post-weaning diets containing 1% polyphenols. The study evaluated sow body weight and backfat changes during lactation, feed intake, milk composition (at day 3 and 17), piglet growth and feed intake from birth through early post-weaning. Sow performance was analyzed via ANOVA (R-studio software), considering the sow as the experimental unit. A linear mixed model assessed the effects of diet and parity (fixed factors) and run (random factor). Milk composition was analyzed using a model that incorporated diet, test day (day 3 vs. day 17), and their interaction as fixed effects, with run as a random factor. Post-weaning piglet performance was evaluated using a linear mixed model, with sow and piglet diets and their interaction as fixed effects, while run and box were random factors, with piglets nested within their foster mother. OXILEM supplementation had no significant impact on sow performance but increased total milk protein content at day 3 post-partum (5.58% in CON vs. 5.84% in OX, P = 0.04) with no differences observed at day 17. The sow diet significantly influenced piglet post-weaning growth, with higher body weight in piglets nursed by CON-fed sows and those fed the CON diet post-weaning (P < 0.05). However, the sow × piglet diet interaction was not significant. These findings indicate that while OXILEM supplementation may enhance total milk protein content, its direct application to piglets needs further investigations to optimize the supplementation strategy to balance sow benefits with optimal piglet development.