PSIV-17 The Effect of Live Yeast and Yeast Extracts Included in Lactation Diets on Sow and Litter Performance and Antimicrobial Susceptibility of Sow Fecal *Escherichia Coli*.

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Abstract: Eighty sows (Line 241; DNA Genetics) were used to evaluate the effect of feeding live yeast and yeast extracts to lactating sows on sow and litter performance and antimicrobial resistance (AMR) patterns of sow fecal *Escherichia coli*. Sows were blocked by farrowing group, BW, and parity on d 110 of gestation and allotted to 1 of 2 dietary treatments. Dietary treatments consisted of a standard lactation diet or a diet that contained yeast-based pre- and probiotics (0.10% Actisaf Sc 47 HR+ and 0.025% SafMannan; Phileo by Lesaffre, Milwaukee, WI). Diets were fed from d 110 of gestation until weaning. A tendency ($P = 0.073$) was observed for increased feed intake through lactation when sows were fed yeast additives compared with the control (5.65 vs 5.90 kg/d). There was no evidence ($P > 0.10$) that treatment influenced any other sow or litter performance criteria. Fecal samples were collected from the first farrowing group (27 sows) to determine AMR patterns of *E. coli* upon entry into the farrowing house and at weaning. Microbroth dilution method was used to determine the minimal inhibitory concentrations (MIC) of E. coli isolates to 14 different antimicrobials. An interaction ($P = 0.026$) of diet × sampling day was observed for cefoxitin where fecal E. coli showed no evidence of treatment differences ($P = 0.237$) in MIC values at entry, but sows fed the control diet had lower ($P = 0.035$) MIC values at weaning compared with sows fed yeast additives. There were no diet main effects ($P > 0.10$) on the AMR of fecal *E. coli*. There was an increased ($P < 0.02$) trend towards resistance for 11 of the 14 antimicrobials over time (Table 1). In conclusion, feeding live yeast and yeast extracts tended to increase feed intake during lactation but did not influence sow or litter performance and had minimal impact on AMR of fecal *E. coli* during lactation.

Table 1. Main effect of time of sample collection on antimicrobial susceptibilities of fecal *Escherichia coli* in lactating sows.[1]

Antimicrobial	Entry to farrowing	Weaning	*P* =
Amoxicillin:clavulanic acid 2:1 ratio[2]	4.0 ± 0.40	20.1 ± 3.27	< 0.001
Ampicillin	3.4 ± 0.47	24.7 ± 3.52	< 0.001
Azithromycin	4.9 ± 0.56	6.9 ± 0.81	0.016
Cefoxitin	6.9 ± 0.6	21.4 ± 2.8	< 0.001
Ceftiofur	0.45 ± 0.058	5.33 ± 0.693	< 0.001
Ceftriaxone	0.30 ± 0.052	9.41 ± 2.962	< 0.001
Chloramphenicol	8.8 ± 0.67	9.2 ± 0.71	0.742
Ciprofloxacin	0.019 ± 0.0012	0.047 ± 0.0112	0.002
Gentamicin	1.00 ± 0.079	0.93 ± 0.062	0.268
Nalidixic acid	2.4 ± 0.22	4.9 ± 1.21	0.009
Streptomycin	12.5 ± 2.0	22.2 ± 3.6	0.017
Sulfisoxazole	168 ± 30	210 ± 26	0.345
Tetracycline	11.0 ± 2.1	27.3 ± 2.8	< 0.001
Trimethoprim/sulfamethoxazole 1:19 ratio[2]	0.14 ± 0.017	0.34 ± 0.099	0.010

[1] A total of 27 mixed-parity sows and litters were used in a lactation study from d 110 of gestation until weaning with 13 or 14 sows per treatment. Fecal samples were collected upon entry into the farrowing house (approximately d 110 of gestation) and prior to weaning (approximately d 18 post-farrowing). Data reported as geometric mean of MIC ± SEM.

[2] The MIC numerator of the ratio was reported for the antimicrobial's amoxicillin:clavulanic acid 2:1 ratio and trimethoprim/sulfamethoxazole 1:19 ratio.

Keywords: antimicrobial resistance, sows, yeast