Table 107.

	Chemical treatment					
Matrix	Negative	Positive	MCFA 1%	MCFA 2%	Formalde-hyde	Pooled SEM
Feed	undetectable	34.2	41.4	42.8	37.2	0.98
SDAP	undetectable	32.2	32.4	31.6	37.6	

107 Evaluating the inclusion level of medium chain fatty acids to reduce the risk of PEDV in feed and spray-dried animal plasma. R. A. Cochrane[1,*], M. Saensukjaroenphon[1], S. S. Dritz[1], J. C. Woodworth[1], A. R. Huss[1], C. R. Stark[1], J. M. DeRouchey[1], M. D. Tokach[1], R. D. Goodband[1], J. F. Bai[1], Q. Chen[2], J. Zhang[2], P. C. Gauger[2], R. Main[2], C. K. Jones[1], *[1]Kansas State University, Manhattan, [2]Iowa State University, Ames.*

Research has confirmed that chemical treatments, such as medium chain fatty acids (MCFA) and commercial formaldehyde, can be effective to reduce the risk of porcine epidemic diarrhea virus (PEDV) cross-contamination in feed. However, the efficacy of MCFA levels below 2% inclusion is unknown. The objective of this experiment was to evaluate if a 1% inclusion of MCFA is as effective at PEDV mitigation as a 2% inclusion or formaldehyde in swine feed and spray-dried animal plasma (SDAP). Treatments were arranged in a 4 × 2 × 6 plus 2 factorial with 5 chemical treatments: 1) PEDV positive with no chemical treatment, 2) 0.325% commercial formaldehyde, 3) 1% MCFA, and 4) 2% MCFA; 2 matrices: 1) complete swine diet and 2) SDAP; 6 analysis days: 0, 1, 3, 7, 14, and 21 post inoculation; and 1treatment each of PEDV negative untreated feed and plasma. Matrices were first chemically treated, then inoculated with PEDV, and stored at room temperature until being analyzed by RT-qPCR. Data were analyzed by the GLIMMIX procedure of SAS. The analyzed values represent threshold cycle (CT), at which a higher CT value represents less detectable RNA. All main effects and interactions except for day × form were significant ($P < 0.02$). Feed treated with MCFA, regardless of inclusion level, had fewer ($P < 0.05$) viral particles than feed treated with formaldehyde. However, the SDAP-treated with either 1% or 2% MCFA had similar ($P > 0.05$) concentrations of detectable PEDV RNA as the untreated SDAP, while the SDAP treated with formaldehyde had fewer viral particles ($P < 0.05$). The complete feed had a lower ($P < 0.05$) quantity of PEDV RNA than SDAP (34.2 vs. 32.2 for feed vs. SDAP, respectively) ($P < 0.05$). Analysis day also decreased ($P < 0.05$) the quantity of detectable viral particles from d 0 to d 21, (33.2 vs. 39.0, respectively). In summary, time, formaldehyde, and MCFA all appear to enhance RNA degradation of PEDV in swine feed and ingredients, but their effectiveness varies within matrix. The 1% inclusion level of MCFA was as effective as 2% in complete feed, but neither was effective at reducing the magnitude of PEDV RNA in SDAP.

Key Words: feed matrix, medium chain fatty acids, PED

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108 Liquid feeding fermented DDGS to weanling pigs: improvement of growth performance with added enzymes and microbial inoculants. M. Wiseman[1,*], D. Wey[1], C. F. M. de Lange[2], *[1]Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada, [2]University of Guelph, Guelph, ON, Canada.*

Controlled fermentation of coproducts can improve energy availability and gut function through synergistic soluble fiber hydrolysis. This study assessed effects of extended DDGS fermentation on performance and digestive function of newly weaned piglets fed corn and soybean meal based liquid diets. Enzymes (67.2 IU β-glucanase and 51.4 IU xylanase/g DDGS; AB Vista) and silage inoculant (360,000 CFU *Pediococcus pentosaceus* 12,455 and *Propionibacterium jensenii* 30,081/g DDGS; Lallemand Inc.) were added to dry DDGS at the time of liquid feed preparation and delivery (UNFER) or allowed to ferment with DDGS (1 to 7 d at 40°C; 16% DM; FER). Diets were composed of a common base supplement for each of three phases (P; d 0 to 7, 7 to 20, 20 to 42), mixed with DDGS (7.5 (P1), 16.25 (P2), and 25 (P3) % of DM) and water (25% DM). Pigs were separated into two rooms according to initial body weight (BWi; heavy (HBW, 7.6 ± 0.8 kg) or light (LBW, 5.8 ± 0.6 kg)). The study was a randomized block design with results presented as lsmeans ± SEM (FER vs. UNFER, respectively). Owing to a BWi by diet interaction ($P < 0.05$), data were analyzed separately for the two BWi groups (4 pens/BWi and dietary treatment, 14 pigs/pen). To obtain uniform final BW, LBW pigs were fed P3 diets until d 48. On d 42, pH and organic acid concentration were determined in ileal digesta pooled from 2 pigs/pen. Complete liquid FER diet ($n = 9$) had higher content of lactic acid (42.6 ± 17.4 vs. 17.6 ± 1.4 mM) and acetic acid (55.3 ± 37.1 vs. 3.9 ± 0.7 mM) than the UNFER diet ($n = 3$). Overall, there were no differences ($P > 0.10$) in ADG (424 vs. 424 ± 14 g/d for HBW and 404 ± 15 vs. 386 ± 12 g/d for LBW) and DMI (605 vs. 581 ± 16 g/d for HBW and 540 ± 19 vs. 509 ± 16 g/d for LBW). For d 42 to 48, LBW pigs fed FER had greater ADG (941 ± 60 vs. 773 ± 52 g/d, $P < 0.05$), resulting in higher end BW (25.8 ± 0.5 vs. 24.5 ± 0.4 kg, $P < 0.05$). In digesta, total organic acid concentration and pH did not differ between treatments ($P > 0.10$). Digesta fermentation patterns (% of total organic acids), however, differed with FER increasing n-butyric acid (15.0 vs. 1.0 ± 3.8%, $P = 0.04$) and tending to lower lactic acid (30.0 vs. 47.1 ± 6.9%, $P = 0.06$) within HBW, while within LBW, FER tended to increase acetic acid (53.7 ± 7.4 vs. 31.1 ± 6.4%, $P = 0.07$). FER benefited LBW pigs late in the nursery period, altering the gut metabolome, possibly due to sol-