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**235 Impact of yeast cell wall and probiotics on gut microbiota, immunity, and growth in weaned piglets.**

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Abstract: This study investigates the effect of yeast cell wall (YCW) supplementation and multispecies probiotics as alternatives to antibiotic growth promoters (AGPs) on the gut microbiota, immune function, and growth performance in weaned piglets. We utilized a randomized complete block design involving 160 piglets across four treatments during the nursery phase. The treatments administered throughout the experimental period were as follows: CONT+ = basal diet with Halquinol (AGP); YCW = basal diet with *Saccharomyces cerevisiae* yeast cell wall at 1 kg/MT; SIM+ = basal diet with YCW at 0.5 kg/MT + multispecies probiotic (*Bacillus subtilis* 2.0 x 10<sup>9</sup> CFU/g, *Bacillus coagulans* 5.0 x 10<sup>8</sup> CFU/g, *Clostridium butyricum* 5.0 x 10<sup>7</sup> CFU/g, and *Bacillus licheniformis* 2.0 x 10<sup>9</sup> CFU/g) at 0.6 kg/MT; SIM- = basal diet with YCW at 0.5 kg/MT + multispecies probiotic at 0.3 kg/MT. Methodologies include daily feed intake, body weight gain measurement, feed conversion ratio (FCR), diarrhea scoring, serum cytokine and chemokine concentration, and microbiome analysis. Throughout the study period (21 to 63 d), only FCR showed differences ( $P = 0.0076$ ). CONT+ and YCW demonstrated better FCRs, at 1.543 and 1.585 respectively, without significant variation between them, while SIM- lagged with the least favorable outcome at 1.654 (Table 1). At 35 d, IL-10 concentrations were greatest in the SIM- group, showing a 271.25% increase compared with other treatments (Figure 2). At 49 d, IL-8 was least in the YCW group, with a 247% reduction compared with CONT+, while SIM+ and SIM- showed no significant differences compared with other treatments (Figure 1). The Firmicutes/Bacteroidota (F/B) ratio shows that the CONT+ treatment was inferior compared with the YCW, SIM+, and SIM- treatments (Figure 3). The *Lactobacillaceae* family differed between CONT+ and the YCW, SIM+, and SIM- treatments, with the greatest abundance in the SIM+ treatment, followed by SIM- and YCW (Figure 4). The genera *Lactobacillus* differed between the CONT+ treatment compared with the YCW, SIM+, and SIM- treatments. Prebiotics, whether used alone or combined with probiotics, serve as effective substitutes for

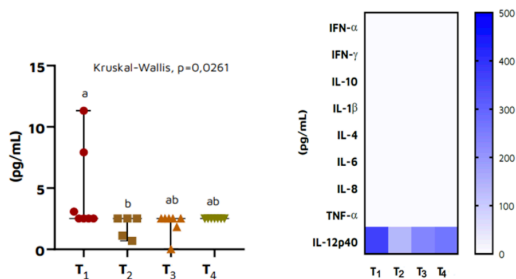
# AGPs, boosting the health and performance of piglets throughout the nursery phase.

**Table 1.** Accumulated performance of piglets with 63 days old.

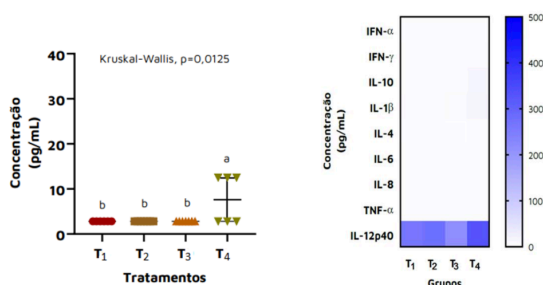
Parameters	CONT+	YCW	SIM+	SIM-	P-Value
BW 63d. (kg)	20.65	20.79	19.47	19.41	0.36
FI (kg)	0.556	0.567	0.539	0.545	0.73
BWG (kg)	0.360	0.358	0.332	0.330	0.15
FC (kg/kg)	1.543 <sup>a</sup>	1.585 <sup>ab</sup>	1.654 <sup>bc</sup>	1.654 <sup>c</sup>	<b>0.007</b>

\*BW – body weight, FI – feed intake, BWG – body weight gain, FC – feed conversion rate.  
 \*\*Statistical relevance is indicated by different letters on each group. ANOVA test and means compared by Tukey (P<0.05).

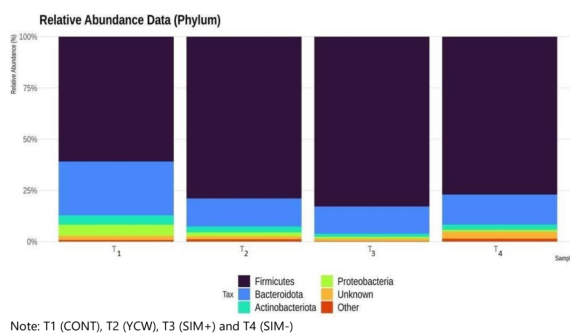
**Figure 1.** Pro-inflammatory cytokines (IL-8)



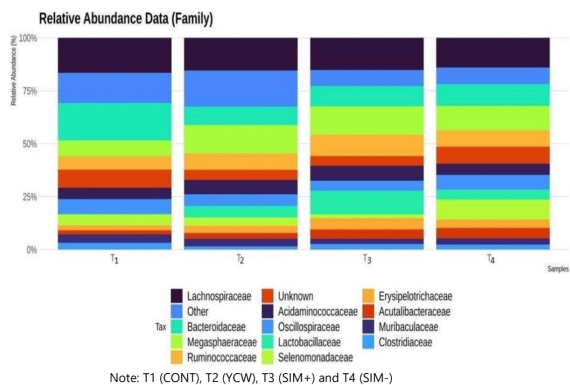
**Figure 2.** Anti-inflammatory cytokines (IL-10)



**Figure 3.** Diversity of the microbiota by phylum.



**Figure 4.** Diversity of the microbiota by families.



**Keywords:** antibiotic alternatives, microbial colonization, post-weaning piglets, yeast cell wall

