



WHERE GLOBAL PET FOOD MEETS

APRIL 29 - MAY 1, 2024
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***In vitro* fermentation of diet fibers using fecal inoculum from dogs on dried brewer's yeast product**

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Abstract details:

The increasing demand for functional ingredients in the pet food industry has drawn attention to yeast and yeast-derived ingredients, as evidence supporting its functional potential in various animal species increases.

This study evaluated the effects of supplementing dogs with a novel dried brewer's yeast product on fecal microbiota fermentation dynamics using an *in vitro* fermentation system. Sixteen healthy adult dogs (BW: 9.0 ± 1.7 kg) were acclimated for seven days and then randomly assigned to a control diet containing no yeast or a dried brewer's yeast-containing diet (n=8/group) for a 21-day period. Fecal samples were used as inoculum for *in vitro* fermentation of three common dietary fiber substrates (beet pulp, pectin and cellulose) over 0, 6, 12 or 18 hours. *In vitro* pH, short-chain fatty acid (SCFA) and microbial analyses were conducted for each time point. Blank-corrected data were analyzed using the PROC MIXED procedure of SAS (SAS Institute Inc., version 9.4, Cary, North Carolina), with the main effects of inoculum source and time within substrate. Significance was declared at $P \leq 0.05$, with trends being $P \leq 0.10$. Results showed differences in fermentation patterns among fiber substrates over time ($P < 0.01$). Within beet pulp, tubes inoculated with feces of dogs fed yeast had a slower and more moderate decrease in pH over time than those inoculated with feces of control dogs ($P < 0.01$). Total SCFA ($P = 0.07$) and acetate ($P = 0.06$) production tended to be higher in control tubes than yeast tubes, agreeing with the pH data. In addition, tubes inoculated with feces from dogs fed yeast had a greater reduction in *Fusobacterium* ($P < 0.01$) and greater increase in *Catenibacterium* ($P = 0.02$) over time than control tubes. On the other hand, tubes inoculated with feces from controls had greater increases in *Streptococcus* ($P < 0.01$) and tended to have greater decreases in *Collinsella* ($P = 0.09$) and *Peptoclostridium* ($P = 0.08$) over time than tubes from dogs fed yeast.



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In conclusion, this study suggests that dried brewer's yeast influences the canine gastrointestinal microbial composition and fermentation patterns *in vitro*. Given the current focus on canine applications, future research should consider the effects of dried brewer's yeast products on feline diets to better understand its effects across companion animal species.

Biography:

Vanessa M. De La Guardia-Hidrogo graduated from Zamorano University with a Bachelor of Science degree in Science and Agricultural Production. In 2019, she relocated to the U.S. to pursue a Master of Science degree in Animal Sciences at Mississippi State University. During her master's studies, Vanessa's research efforts resulted in four abstracts and two peer-reviewed publications. Following her graduation, she commenced her doctoral studies under the guidance of Dr. Kelly Swanson at the University of Illinois Urbana-Champaign. Currently, her research focuses on investigating the impact of dried brewer's yeast products on the gastrointestinal health and immunity of companion animal species.