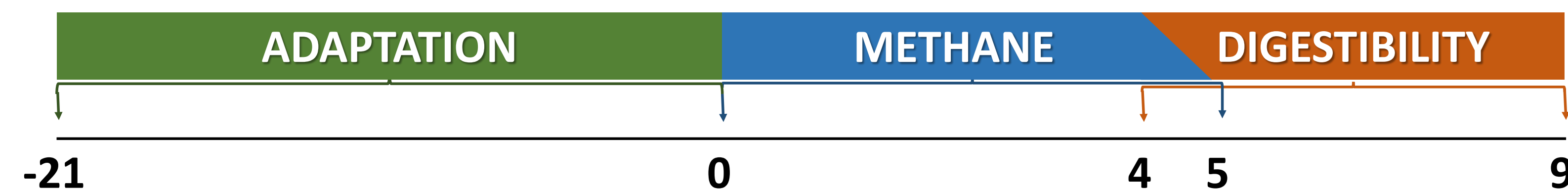


INTRODUCTION

- Rationale:** There is a great interest to mitigate enteric methane (CH₄) emissions by ruminants for environmental concerns and the potential to reduce a portion of gross energy that would otherwise be lost. In previous research conducted with the rumen simulation technique, addition of an *Aspergillus oryzae* extract reduced the proportion of CH₄ in the gas collected from the vessels. *Aspergillus oryzae* prebiotic (AOP) has demonstrated diet-dependent positive effects in feed efficiency and nutrient digestibility of beef cattle. To the best of our knowledge, the effects of AOP on enteric methane emissions of ruminants have not been evaluated in vivo.
- Objective:** To evaluate the effects of an *Aspergillus oryzae* prebiotic supplementation on enteric CH₄ emissions in beef steers fed a backgrounding corn silage-based diet.
- Hypothesis:** Supplementing an *Aspergillus oryzae* prebiotic may reduce the enteric CH₄ emissions of beef steers.

MATERIALS & METHODS

TIMELINE (days):



- Treatments:**
 - AOP:** *Aspergillus oryzae* prebiotic ("Amaferm", Biozyme Inc., St. Joseph, MO) inclusion at 0.032 % DM
 - CTL:** Control, no inclusion of AOP
- Basal common diet (DM basis):** Whole-plant corn silage 85%, Cottonseed meal 13%, Vitamin-mineral Conc. 2%
- Switchback design** with 2 periods, and a 7-d washout interval between periods. Steers were housed in 4 pens equipped with two GrowSafe feed bunks each to measure individual feed intake
- Daily collection** in 2 L canisters, from d 0 to 5. Using the sulfur hexafluoride (SF₆) tracer technique (Johnson et al., 1994). Gaseous sub-samples were stored in 60 mL bottles, and analyzed by gas chromatography. Indigestible NDF from feed and feces was utilized as an internal marker to calculate apparent total tract digestibility of nutrients
- Data was analyzed** using the MIXED procedure of SAS (SAS Institute Inc., Cary, NC)



RESULTS

Table 1. Effects of *Aspergillus oryzae* prebiotic on intake and enteric methane emissions of beef steers

	Treatment		SEM	P- value
	AOP	CTL		
Intake				
DM, kg/d	6.9	7.3	0.24	0.17
OM, kg/d	6.6	7.0	0.23	0.16
DM, as % of BW	2.6	2.7	0.07	0.58
Methane emissions				
g/d	262.8	237.8	19.03	0.26
g/kg DMI	39.1	32.8	2.73	0.09
g/kg OMI	40.7	34.1	2.85	0.09
g/kg DMD	58.2	50.2	4.15	0.14
g/kg OMD	59.1	51.0	4.20	0.15
g/kg MBW	4.0	3.5	0.28	0.16

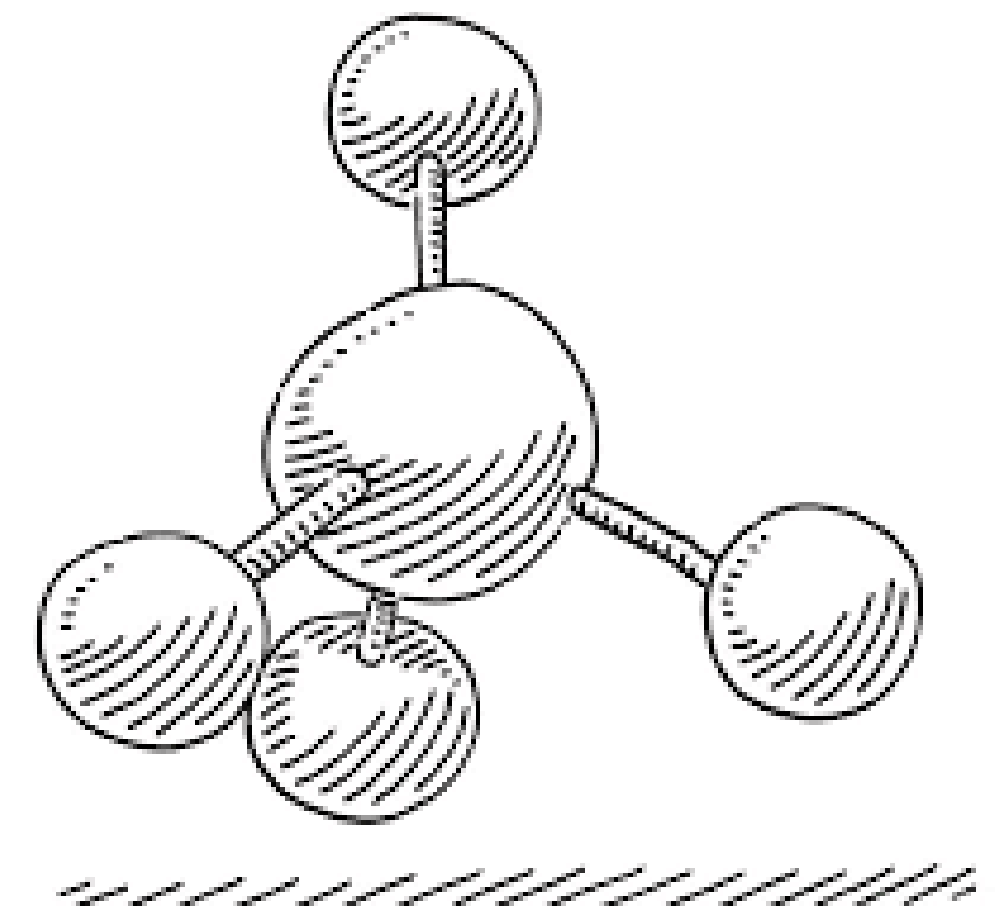


Image: <https://pixels.com/featured/methane-molecule-drawing-frank-ramspott.html>

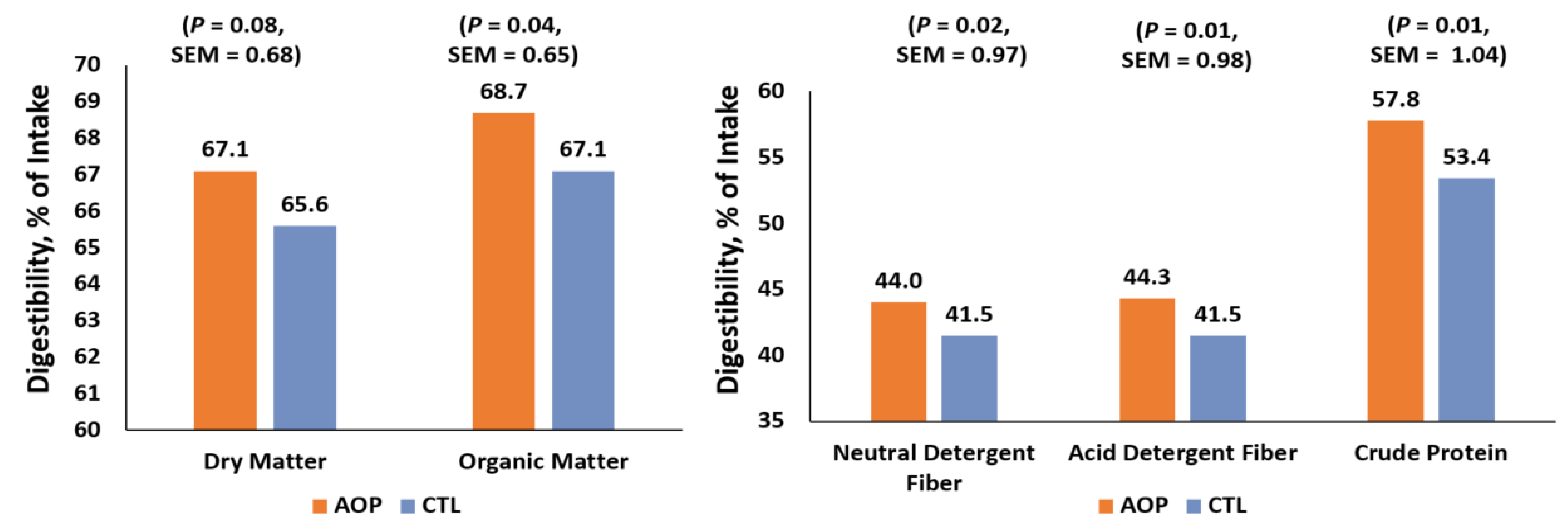


Figure 1. Effect of *Aspergillus oryzae* prebiotic inclusion on apparent total tract digestibility of beef steers

CONCLUSION

Inclusion of AOP resulted in minor changes on enteric methane emissions, with an overall improvement of apparent total tract digestibility of nutrients. Further research should evaluate the effects of inclusion of AOP in the emissions intensity in g of methane per kg of animal product.

AKNOWLEDGEMENTS

