

Effects of monensin sodium & xylanase on broiler growth performance

C.A. Hill, C.J. Delfelder, R.S. Beyer, C.R. Stark, C.E. Evans, A.D. Yoder, C.K. Jones

Department of Animal Science & Industry, Kansas State University, Manhattan

Introduction

- Antimicrobials are used to fight against bacteria, viruses, fungi and protozoa, which is why they are used everywhere
- Excessive use is increasing pressure from the consumer to limit antimicrobial usage in poultry feeds
- Monensin sodium is a popular antimicrobial additive but a potential alternative, exogenous xylanase, is an enzyme known to improve nutrient digestibility in high fiber poultry diets

Objective

- Evaluate ability of xylanase replacing monensin sodium to improve nutrient digestibility of higher fiber diets
- Evaluate the difference between the xylanase and monensin diets on weight gain, total feed intake and feed conversion ratio



Support

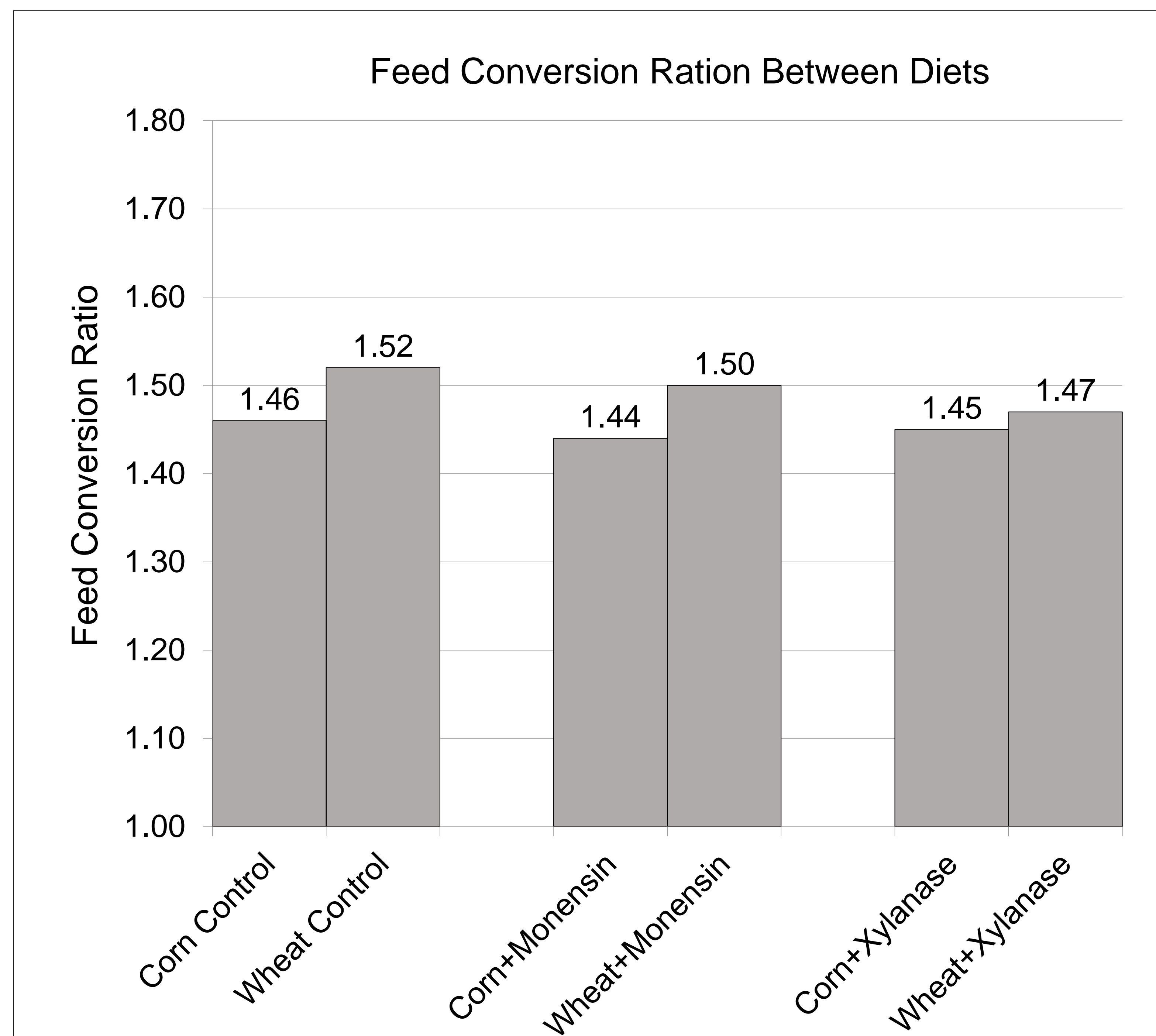
Appreciation is expressed to Koch Industries for financial support of this experiment



Experimental Diets

Ingredient, lbs	Trt 1 – Corn Negative Control	Trt 2 – Wheat Negative Control	Trt 3 – Corn Positive Control	Trt 4 – Wheat Positive Control	Trt 5 – Corn + Xylanase	Trt 6 – Wheat + Xylanase
Wheat	0	165	0	165	0	165
Corn	147	0	147	0	147	0
Soybean meal	88	68.4	88	68.4	88	68.4
Soy oil	4.45	6.83	4.45	6.83	4.45	6.83
Dical	5.43	5.08	5.43	5.08	5.43	5.08
Limestone	1.95	0.85	1.95	0.85	1.95	0.85
Salt	0.58	0.35	0.58	0.35	0.58	0.35
L-Lys	0.45	0.85	0.45	0.85	0.45	0.85
DL-Met	0.63	0.60	0.63	0.60	0.63	0.60
L-Thr	0.075	0.30	0.075	0.30	0.075	0.30
Sodium bicarb	0.45	0.90	0.45	0.90	0.45	0.90
Poultry VTM	0.75	0.75	0.75	0.75	0.75	0.75
Econase XT	0	0	0	0	12.5 g	12.5 g
Coban 90	0	0	0.125	0.125	0	0
Total	250	250	250	250	250	250

Feed Conversion



Experimental Procedure

- 216 1-day-old Cobb chicks
- Six dietary treatments consisted of mashed diets manufactured at the O.H. Kruse Feed Technology Innovation Center from either ground corn or wheat
- These diets were made with either 0.10 g/kg monensin sodium (Coban 90; Elanco Animal Health, Greenfield, IN) or 16,000 betaxylanase units/kg beta 1-4, endo-xylanase enzyme (Econase XT; AB Vista, Marlborough, UK)
 - Corn-based control
 - Wheat-based control
 - Corn-based with monensin sodium only
 - Wheat-based with monensin sodium only
 - Corn-based with xylanase only
 - Wheat-based with xylanase only
- Birds were fed on an ad libitum system for 21 days, with body weight and feed intake being recorded weekly
- Data was used to determine overall weight gain, total feed intake and feed conversion ratio and was then analyzed using the GLIMMIX procedure of SAS

Conclusion

- Final body weight, feed intake and feed conversion ratio were impacted by the treatment ($P < 0.01$).
- The corn-based control diet ($P < 0.05$) improved feed conversion ratio compared to the wheat-based control diet but the added antimicrobial treatments of xylanase or monensin sodium did not affect the corn-based when added.
- In the wheat-based diet, xylanase ($P < 0.05$), but not monensin sodium ($P > 0.05$) improved FCR compared to the wheat-based control
- The monensin sodium showed little impact potentially due to the controlled environment of the caged batteries
- This project does suggest that xylanase improves the carbohydrate digestibility in wheat-based diets in the research project setting