UTILIZATION OF DRIED BAKERY PRODUCT BY FINISHING BEEF STEERS

C. T. Milton and R. T. Brandt, Jr.

Summary

One hundred forty-four medium-framed crossbred steers averaging 857 lb were used to evaluate steer performance and determine net energy (NE) values of finishing diets that included dried bakery product (DBP). DBP replaced corn in the control diet at 15 or 30% of dietary DM. DM intake was depressed 6.5% by inclusion of 30% DBP. No differences in daily gain (P > .3) or feed efficiency (P > .9) were observed by replacing corn with DBP. Dietary values of NEm and NEg, calculated from animal performance, were not affected (P > .7) by the inclusion of DBP. Kidney, pelvic, and heart fat (KPH) (P < .05) and 12th rib fat thickness (P < .1) were increased linearly with inclusion of DBP, whereas other carcass characteristics were unaffected. These data indicate the DBP (10% rice hulls included) has an energy value similar to that of corn grain, although the optimal inclusion level of DBP appears to be below 30% of dietary DM.

(Key Words: Finishing Steers, Dried Bakery Product, Net Energy.)

Introduction

Dried bakery product is comprised of a variety of commodities such as hard and soft wheat products, pasta, potato chip waste, breakfast cereals, and other similar ingredients. Because it may be useful in finishing diets, our objectives were to evaluate effects of dietary level of DBP on animal performance and to determine its relative energy value.

Experimental Procedures

One hundred forty-four medium-framed, crossbred steers (857 lb), selected from a larger group of 387 based on breed type and weight, were stratified into one of four weight replicates. Within each replicate, steers were randomly allotted to one of three dietary treatments. The control diet was 80% rolled corn, 10% chopped alfalfa hay and 10% supplement and molasses. In the other diets, dried bakery product replaced corn at 15 or 30% of dietary DM. All diets were isonitrogenous (Table 1). The DBP in this study contained 9.5% CP, 10.9% EE, .28% Ca, and .32% P, with 10% rice hulls added for flowability. Initial steer weight was the average of two consecutive morning weights. A single final weight was used due to inclement weather conditions. Initial and final weights were shrunk 4% to approximate empty body weight for calculation of ADG, feed efficiency, dressing percentage, and NE values. Upon arrival, all steers were vaccinated against IBR, BVD, PI_3, and 7-way clostridia and were given an anthelmintic. Steers received Synovex-S® implants and were reimplanted on day 55 of the feeding period with Ralgro®. Following a 2-week step-up period, steers were fed experimental diets for 125 days. Liver scores and hot carcass weights were obtained at slaughter, and marbling score, KPH, and 12th rib fat thickness were obtained following a 24-hr chill. Dietary NEm and NEg values were calculated using NRC equations based on observed DM intake and ADG. NEm requirements were adjusted upward 14% (NRC, 1984) to account for wet, cold weather and muddy pens.

Results and Discussion

Results are shown in Table 2. DM intake of cattle consuming 30% DBP was depressed 6.5% vs control. There were no differences in daily gain (P > .3) or feed efficiency (P > .9) when DBP replaced corn. The increased fat (Table 1) from 30% DBP inclusion may have reduced intakes. We have observed that effect in other studies with 3 to 4% fat added to corn-based diets. Dietary concentrations of NEm and NEg were not different (P > .7) among treatments, suggesting that NEm and NEg concentrations of DBP were similar to those for corn. Replacing corn with DBP resulted in linear increases in KPH (P < .05) and 12th rib fat thickness (P < .10). These results are similar to those from earlier studies on the addition of supplemental fat and suggest that DBP may alter carcass characteristics if used at high levels. Hot carcass weights, dressing percentage, and marbling scores were not affected (P > .5) by the inclusion of DBP. Cattle grading Choice (63%) were not affected by inclusion of DBP. The incidence of liver abscesses (38%) was not affected by treatment; no Tylosin® was included in diets. These results suggest that DBP and corn have similar NEm and NEg. Because of decreased feed consumption and increased carcass fatness, the optimal inclusion levels of DBP appears to be below 30% of dietary DM.

Table 1. Composition of Experimental Diets (DM Basis)

Diet	Control	15% DBP	30% DBP
Crude protein, %	12.0	12.0	11.9
Ether extract, %	2.7	3.9	5.1
Ca, %	.59	.59	.58
P, %	.30	.32	.34

Table 2. Effect of DBP Inclusion on Performance and Carcass Traits of Steers

Item	Control	15% DBP	30% DBP	SEM
No. pens	4	4	4	
No. steers	48	48	48	
Initial wt[a], lb	823	823	822	1.13
Final wt[a], lb	1215	1221	1194	12.23
ADG, lb	3.13	3.18	2.97	.09
DM intake[b], lb	23.07	23.24	21.58	.56
Feed/gain	7.36	7.29	7.19	.01
HCW, lb	770	761	761	8.39
Dressing %	63.5	62.4	63.9	1.01
KPH[c],%	2.25	2.38	2.43	.02
Fat 12th rib[d], in.	.43	.48	.49	.02
Marbling score[e]	5.38	5.29	5.25	.17
Pct. Choice	63.8	66.7	58.7	
Liver abscesses, %	36.2	39.6	39.1	
NEm, Mcal/lb	.861	.864	.885	.02
NEg, Mcal/lb	.569	.571	.589	.02

[a]4% pencil shrunk.
[b]Linear trend P < .11.
[c]Linear effect P < .05.
[d]Linear effect P < .10.
[e]4 = slight, 5 = small, 6 = modest.