

Effect of Corn-Based Fermented Total Mixed Ration with *Lactobacillus casei* TH14 on Nutrient Digestibility and Blood Metabolites in Beef Cattle

Seangla Cheas, Chanon Suntara, Metha Wanapat, and Anusorn Cherdthong*

Tropical Feed Resources Research and Development Center (TROFREC), Department of Animal Science, Faculty of Agriculture, Khon Kaen University, Khon Kaen 40002, Thailand

Background

More digestible but unstable in tropical conditions.
(Jiang et al., 2020)

Abundant but poor in nutrition.



(Supapong & Cherdthong, 2020)

Lactic acid bacteria



To evaluate how corn- and rice-straw FTMRs with LAB and molasses affect digestibility, rumen fermentation, and blood metabolism in beef cattle.

Discussion

➡ **Corn + molasses + *L. casei* TH14 (T3)**
Improve digestibility and blood metabolism



Produces lactic acid → lowers pH → preserves nutrients → improves microbial activity and fiber digestion.



Provides starch → main energy source → enhances microbial growth and propionate formation → increases digestibility and blood glucose.



Supplies soluble sugars → synchronizes energy with nitrogen → boosts fermentation efficiency and reduces BUN.

Conclusion

Nutrient digestibility

- DM ↑
- CP ↑
- NDF ↑

Blood metabolism

- BUN ↓
- Blood glucose ↑



Corn-FTMR with *L. casei* TH14 and molasses

Acknowledgments

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References

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2. Supapong C, Cherdthong A. Effect of sulfur and urea fortification of fresh cassava root in fermented total mixed ration on the improvement of milk quality of tropical lactating cows. *Vet Sci* 2020;7:98. <https://doi.org/10.3390/vetsci7030098>.

Methodology

Experimental Design: 4 × 4 Latin square design



Thai native beef cattle
(200 ± 10 kg)

- 4 periods
- 21 days/ period
- 14 days of adaptation
- 7-day sampling.

Table 1: Ingredients and chemical composition of corn FTMR and rice straw FTMR (Kg DM)

Items (Kg, DM)	Treatments			
	T1	T2	T3	T4
Corn	60.00	60.00	60.00	60.00
Rice straw	60.00	-	-	-
Molasses	3.00	3.00	3.00	3.00
Cassava chips	20.75	22.00	22.00	22.00
Palm kernel meal	3.00	3.00	3.00	3.00
Soybean meal	5.00	5.00	5.00	5.00
Rice bran	5.00	5.00	5.00	5.00
Urea	1.75	0.5	0.5	0.5
Mineral premix	1.00	1.00	1.00	1.00
Salt	0.50	0.50	0.50	0.50
Chemical composition (%DM)				
Dry matter	36.43	37.80	36.74	36.70
Crude protein	9.75	9.60	10.18	10.31
NDF	57.62	41.11	39.84	43.36
ADF	36.26	21.60	20.49	23.51
Lactic acid	9.74	8.66	10.41	9.33



Sample collection

- Feed samples
- Blood samples
- Fecal samples.

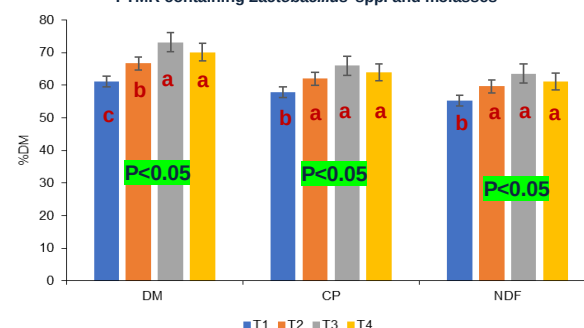
Sample Analysis

- Chemical composition
- Digestibility
- Blood glucose
- Blood urea nitrogen.

➡ Data were analyzed statistically using SAS (2002).

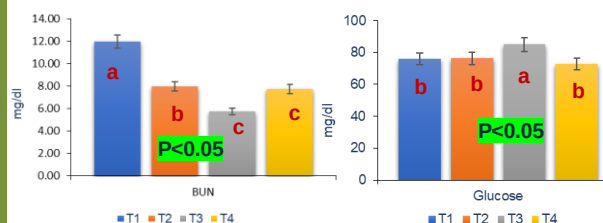
Results

Figure 1: Nutrient digestibility in Thai native beef cattle fed corn- or rice straw-FTMR containing *Lactobacillus* spp. and molasses



T3 → best nutrient digestibility (DM ↑, CP ↑, NDF ↑).

Figure 2: Blood metabolism in Thai native beef cattle fed corn- or rice straw-FTMR containing *Lactobacillus* spp. and molasses



T3 → Improves nitrogen efficiency (↓ BUN) and boosts energy status (↑ blood glucose) in beef cattle.