



THE EFFECT OF A-MAX CONCENTRATE VS A-MAX XTRA ON MICROBIAL METABOLISM IN CONTINUOUS CULTURE OF RUMEN CONTENTS.

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Introduction: A-MAX™ Concentrate has shown to be efficacious in enhancing rumen metabolism and milk production in lactating-cow studies. Its inclusion rate is 2 oz/h/d. Cost savings can be incurred if the product is concentrated and fed at 1 oz/h/d, which includes the same active ingredients.

Objective: To determine the effect of nutrient digestion and microbial metabolism of rumen microbes in continuous culture when fed a TMR with either A-MAX Concentrate at 2 oz/cow/d, or with A-MAX Xtra at 1 oz/cow/d.

Materials and Methods: This study was conducted in a continuous-culture system (Hoover et al. 1996, J. Anim. Sci., 43:528). The system was operated under the following conditions: liquid dilution rate: 12%/h, solid retention time: 22 h, feed intake: 100 g DM/d, feeding frequency: twice daily, fermentation temperature: 39°C. The data was subjected to ANOV where A-MAX Concentrate vs. A-MAX Xtra was compared.

Results: In this study digestion coefficients for A-MAX Xtra were not different from A-MAX Concentrate Total VFA or molar percentages were also similar. Moles/d of acetic and propionic acid were similar as well as average daily pH. There were no differences in any of the nitrogen partitioning, microbial growth, or efficiency parameters that were evaluated.

Conclusion: A-MAX Xtra fed at 1 oz/h/d can replace A-MAX Concentrate, fed at 2 oz/h/d with an equal effect on rumen microbial metabolism.

Results Tables:

Table 1. Digestion Coefficients for Dry Matter, Fiber and Nonstructural Carbohydrates.			
Item	A-MAX™ Conc.	A-MAX Xtra	A-MAX Conc. vs. Xtra
Digestion, %			
Dry Matter	61.7	60.4	NS
Neutral Detergent Fiber	18.5	17.8	NS
Acid Detergent Fiber	20.0	21.9	NS
Nonstructural Carbohydrate ¹	82.8	83.4	NS

¹ Includes sugar and starch

NS = P > .10

Table 2. Volatile Fatty Acid (VFA) Production, Molar Ratios and Average Daily Fermenter pH.			
Item	A-MAX Conc.	A-MAX Xtra	A-MAX Conc. vs. Xtra
Total VFA, mmoles/d	361	356	NS
Molar Percentages:			
Acetic	48.9	49.9	NS
Propionic	36.9	36.8	NS
A-P Ratio	1.33	1.36	NS
mmoles/day:			
Acetic	176	178	NS
Propionic	133	131	NS
Average pH	5.70	5.67	NS
2 h	5.47	5.42	NS
4 h	5.49	5.33	NS

NS = P > .10

Table 3. Nitrogen Partitioning, Microbial Growth and Microbial Efficiency.			
Item	A-MAX Conc.	A-MAX Xtra	A-MAX Conc. vs. Xtra
Non-ammonia N, g/d	3.07	3.05	NS
By-Pass N, g/d	1.23	1.22	NS
Microbial N, g/d	1.84	1.83	NS
Efficiencies:			
Mic. N/kg DMD ¹	29.8	30.3	NS
Mic. N/kg CHOD ²	50.9	53.2	NS
Nitrogen, %	9.26	9.12	NS

¹ Microbial N produced per kg dry matter digested.

² Microbial N produced per kg total carbohydrate digested. NS = P > .10

