

THE EFFECT OF A-MAX ULTRA VS YEASACC LIVE YEAST ON MICROBIAL METABOLISM IN CONTINUOUS CULTURE

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Introduction: A-MAX™ Ultra is a highly concentrated yeast culture shown to be efficacious in enhancing milk production in dairy studies. YeaSacc® is a live cell yeast product. There is much controversy surrounding the modes of action of these products. It has been suggested that live cell products act as a strong rumen metabolism enhancer compared to yeast culture (YC) because of its oxygen scavenging role in the rumen. This action results in ruminal populations to be stimulated thus enhancing nutrient digestion and microbial growth.

Objective: To determine the effect of either A-MAX Ultra or YeaSacc on nutrient digestion and microbial metabolism of in continuous culture.

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. A-MAX Ultra was fed at 14 g/cow/day and YeaSacc live yeast product fed at 10 g/cow/d equivalent in a TMR. The data was subjected to ANOV where A-MAX Ultra vs. YeaSacc was compared.

Results: In this study digestion coefficients for A-MAX Ultra were not different from YeaSacc. Total VFA or molar percentages of acetic and propionic acids were not affected by yeast type. Moles/d of acetic and propionic acid were also 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 Ultra fed at 14 g/h/d and YeaSacc fed at 10 g/h/d were shown to be equally effective in their role on rumen microbial metabolism in continuous culture.

Results Tables:

| Item | A-MAX™ Ultra | YeaSacc | A-MAX Ultra vs. YeaSacc |
|---|--------------|---------|-------------------------|
| Digestion % | | | |
| Dry Matter | 67.1 | 65.8 | NS |
| Organic Matter | 59.6 | 60.8 | NS |
| Nonstructural Carbohydrate ¹ | 76.9 | 80.0 | NS |
| Total Carbohydrate ¹ | 43.0 | 44.9 | NS |

¹ Includes sugar and starch, NS = P > .05

| Item | A-MAX Ultra | YeaSacc | A-MAX Ultra vs. YeaSacc |
|---------------------|-------------|---------|-------------------------|
| Total VFA, mmoles/d | 381 | 398 | NS |
| Molar Percentages: | | | |
| Acetic | 54.6 | 54.1 | NS |
| Propionic | 24.6 | 23.5 | NS |
| A-P Ratio | 2.25 | 2.31 | NS |
| mmoles/day: | | | |
| Acetic | 208 | 215 | NS |
| Propionic | 93 | 93 | NS |
| Average pH | 6.17 | 6.17 | NS |

NS = P > .05

| Item | A-MAX Ultra | YeaSacc | A-MAX Ultra vs. YeaSacc |
|-----------------------------|-------------|---------|-------------------------|
| Non-ammonia N, g/d | 3.03 | 3.05 | NS |
| By-Pass N, g/d | .90 | .83 | NS |
| Microbial N, g/d | 2.13 | 2.22 | NS |
| Efficiencies: | | | |
| Mic. N/kg DMD ¹ | 31.7 | 33.8 | NS |
| Mic. N/kg CHOD ² | 49.6 | 49.6 | NS |
| TVFA/kg CHOD | 8.87 | 8.85 | NS |

¹ Microbial N produced per kg dry matter digested.

² Microbial N produced per kg total carbohydrate digested. NS = P > .05

