

### Reference 19

Li, ZJ; Deng, Q; Liu, YF; Yan, T; Li, F; Cao, YC; Yao, JH 2018 Dynamics of methanogenesis, ruminal fermentation and fiber digestibility in ruminants following elimination of protozoa: a meta-analysis JOURNAL OF ANIMAL SCIENCE AND BIOTECHNOLOGY, 9, 89. 10.1186/s40104-018-0305-6

### Background and objective

Ruminal microbes are vital to the conversion of lignocellulose-rich plant materials into nutrients for ruminants. Although protozoa play a key role in linking ruminal microbial networks, the contribution of protozoa to rumen fermentation remains controversial. The current meta-analysis was conducted to quantitatively summarize the temporal dynamics of methanogenesis, ruminal volatile fatty acids (VFA) profiles and dietary fiber digestibility in ruminants after defaunation, and to explain the contribution of the defaunated duration to the between-study heterogeneity.

### Search strategy and selection criteria

Literature search in scientific electronic databases and citations in review papers. 1) Peer-reviewed and published in the English language; 2) complete defaunation in vivo; 3) inclusion of relevant variables for extraction. The relevant variables for this meta-analysis included the daily methane (CH<sub>4</sub>) production, ruminal VFA profiles and dietary fiber total-tract digestibility.

### Data and analysis

The meta-analysis was performed using Stata 14.1. Between-study variability was quantified via the I<sup>2</sup> statistic, which measures the percentage of variation due to heterogeneity. When the value of I<sup>2</sup> was over 50%, indicating high heterogeneity, studies were combined using a random effects model, based on the assumption that the expected effect from each study was heterogeneous.

Number of papers	Population	Intervention	Comparator	Outcome	Quality score
22	Cattle and sheep	Ruminal protozoa (RP) inhibition	No elimination of rumen protozoa	Metric: Methane (CH <sub>4</sub> ) production(L/d); Effect size: Standardized difference of the considered metrics between intervention and control	68.75

### Results

- Results showed that elimination of rumen protozoa reduced (P < 0.05) CH<sub>4</sub> production.
- NULL
- NULL
- NULL
- NULL

### Factors influencing effect sizes

- No factors influencing effect sizes to report

### Conclusion

Protozoa elimination showed positive effect on methane production.