

Effect of the feed additive 3-nitrooxypropanol on the CH_4/CO_2 ratio in an on-farm trial with dairy cattle

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Introduction



IN = non-edible fiber-rich feeds



OUT =
human-edible
foods, e.g.
milk



Introduction

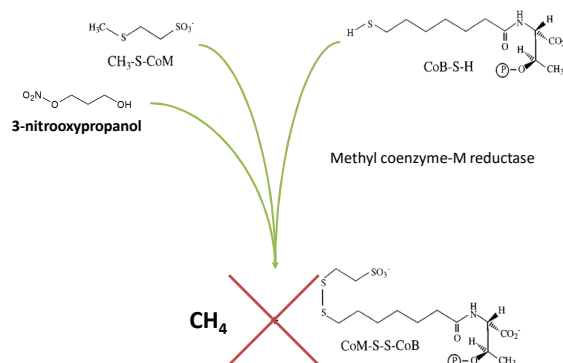
• GWP

Greenhouse Gas		Time in atmosphere (year)	AR5 (100)
Carbon dioxide	CO_2	100-200	1
Methane	CH_4	12	34

• Various mitigation practices:

- nutritional intervention (e.g. feed additives such as 3-nitrooxypropanol)
- genetics
- ...

Introduction



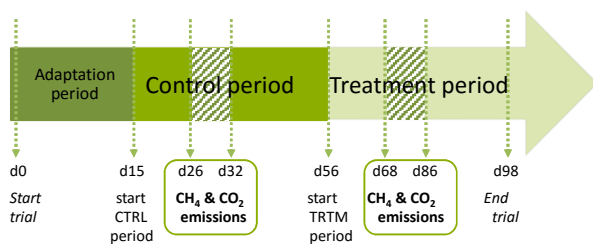
Material and Methods

- 34% MS - 27% GS - 7% PBP - 32% conc. (DM)
- Balanced concentrate, soybean meal and protected soybean meal on an individual base
- 10 high-producing (>30kg/d) Holstein cows
 - 8 cows received 1,7g **3-NOP**/cow/d
 - 2 cows received placebo additive (reference cows)
- **3-NOP** and placebo mixed in soybean meal and soybean oil

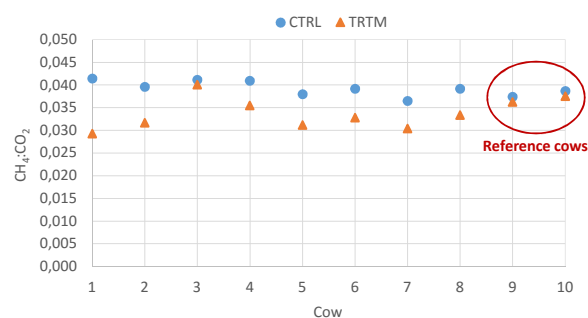
Material and Methods



Material and Methods



Results



Results

CH₄/CO₂ ratio for treated and reference cows during control (CTRL) and treatment (TRTM) period

Cows	CTRL*	TRTM*
Treated (n=8)	0,039 ± 0,0017	0,033 ± 0,0034
Reference (n=2)	0,038 ± 0,0009	0,037 ± 0,0009

* Mean +/- standard deviation

15% reduction

Discussion

- **3-NOP** has great potential to reduce methane emissions
 - Previous research:
 - 30% reduction (Hristov et al., 2015)
 - 6-10% reduction (Reynolds et al., 2014)
- Way of administration is important

Conclusion

- **3-NOP** has great potential to reduce methane emissions
 - on average 15% reduction
 - no change for the reference cows
- Variation between animals is larger during treatment

Future perspectives

- Further investigate
 - effect on milk production
 - effect on milk composition
 - effect on body weight gain
 - ...
- Second trial with 3-NOP (Summer 2016)
 - Comparing different ways of administration
 - Concentrate (pellet)
 - Roughage

Thank you



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