

**Table S1.** In vivo experimental treatments resulting in 60% or more decrease in enteric methane (CH<sub>4</sub>) production.

Reference	Animal, diet	Inhibitor/algae (g/kg diet DM <sup>1</sup> )	Treatment period (d)	Inhibition relative to Control treatment (% decrease in CH <sub>4</sub> animal <sup>-1</sup> d <sup>-1</sup> )	Comments
Trei et al. (1971) experiment 1	Lambs, mixed	2, 2, 2- trichloroacetamide (0.10)	7	94 <sup>2</sup>	Decreased rumen acetate to propionate concentration ratio
Trei et al. (1971) experiment 2	Lambs, mixed	Hemiacetal of chloral and starch (2.0)	90	67 <sup>2</sup>	Additive tended to improve G: F
Johnson (1972)	Lambs, mixed	Hemiacetal of chloral and starch (2.2)	9	49 to 82	Restricted DMI. Inhibition was greater at high intake level
Johnson et al. (1972)	Steers, mixed	BCM (0.50)	28	~65 <sup>2, 3</sup>	ADG unaffected
Johnson (1974)	Lambs, high concentrate	Hemiacetal of chloral and starch (1.1)	3	64	N retention improved
Sawyer et al. (1974)	Sheep	BCM (0.1 – 0.3)	26	83 to 86	Improved DM and N digestibility
Davies et al. (1982)	Calves, mixed	ICI 13409 (0.20)	196	63 <sup>2</sup>	Improved ADG and G: F
Mathers and Miller (1982)	Ewes, mixed	Chloral hydrate (intraruminal, ~ 1- 4)	10	96	Digestibility unaffected. Decreased rumen acetate to propionate concentration ratio
McCrabb et al. (1997)	Steers, roughage	BCM (0.26)	28	CH <sub>4</sub> not detected	No difference in final body mass
Tomkins and Hunter (2004)	Steers, high concentrate	BCM (0.15-0.20)	28	88-91	No effects on animal performance

Knight et al. (2011)	Cows, roughage	Chloroform (0.27)	42	~38 to 97 <sup>6</sup>	Extent of inhibition of methanogenesis decreased as the experiment progressed
Mitsumori et al. (2012)	Goats, mixed	BCM (2.6)	22	91	No effects on digestibility. Decreased rumen acetate to propionate concentration ratio
Haisan et al. (2014)	Cows, mixed	3-NOP (0.13)	28	60	No change in DMI and milk production and composition. Greater body mass recovery with 3-NOP
Romero-Perez et al. (2015)	Heifers, mixed	3-NOP (0.28)	112	59	No effect on ADG <sup>4</sup> . Decreased rumen acetate to propionate concentration ratio
Li et al. (2016)	Wethers, mixed	<i>Asparagopsis taxiformis</i> (2.7)	72	81	No effects on ADG. Decreased rumen acetate to propionate concentration ratio. Ruminal mucosa alterations identified
Martinez-Fernandez et al. (2016)	Steers, mixed	Chloroform (1.50)	10	65	Decreased rumen acetate to propionate concentration ratio
Vyas et al. (2016), finishing diet	Steers, high concentrate	3-NOP (0.2)	105	84	DMI and ADG tended to decrease
McGinn et al. (2019)	Cattle, high concentrate	3-NOP (0.125)	123	~70	Experiment conducted in a commercial feedlot
Roque et al. (2019)	Cows, mixed	<i>Asparagopsis armata</i> (10)	21	67	DMI decreased. Milk production and protein decreased with highest dose
Kinley et al. (2020)	Steers, high concentrate	<i>Asparagopsis taxiformis</i> (1.8)	90	98	Increased ADG
Roque et al. (2021)	Steers, high concentrate	<i>Asparagopsis taxiformis</i> (4.7)	63	82	No effects on ADG. Tendency to decreased DMI and improved F:

					G. No effects on carcass or meat quality
Alemu et al. (2021)	Steers, high concentrate	3-NOP (0.108)	112	77	Decreased DMI
Cristobal-Carballo et al. (2021)	Calves, milk replacer, concentrate, partial mixed ration, pasture	Chloroform (0.050) plus 9, 10-anthraquinone (0.50)	84	90 <sup>3</sup>	No effects on DMI and ADG
Garcia et al. (2022)	Cows, mixed	3-NOP (0.10)	15	60	Decrease in CH <sub>4</sub> despite more methanogenic diet in 3-NOP period

<sup>1</sup>Abbreviations: 3-NOP = 3-nitrooxypropanol; ADG = average daily body mass gain; BCM = bromochloromethane; CH<sub>4</sub> = methane; DM = dry matter; DMI = dry matter intake; G: F = body mass gain per kilogram of dry matter intake; ICI 13409 = 2,4-bis(trichloromethyl)-benzo [ 1, 3]dioxin-6-carboxylic acid .

<sup>2</sup>Methane concentration, rather than production, was measured, by rumenotomy (Trei et al., 1971; Trei et al., 1972), rumen headspace sampled through the cannula (Johnson et al., 1972), or air expelled in hood (Davies et al., 1982).

<sup>3</sup>Daily average, estimated from graph.

<sup>4</sup>A. Romero-Perez, pers. comm.

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