

Nutrient composition, *in vitro* gas production and digestibility of fenugreek (*Trigonella foenum-graecum*) and alfalfa forages

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The potential of using fenugreek as an alternate annual legume forage (Mir *et al*, 1993, Can J Anim Sci, 73, 993-996) was evaluated by conducting chemical analysis, *in vitro* dry matter disappearance (IVDMD) after incubation with rumen fluid for 48 h and gas production (Menke *et al*, 1979, J Agric Sci, 93,217-222). Fenugreek was grown in a greenhouse and samples were collected at 9, 15 and 19 weeks of growth. In experiment 1, fenugreek forage after nine weeks of growth contained more ash than alfalfa cut at 10 % bloom, yet the IVDMD of fenugreek was greater than that of alfalfa. However, total gas produced (a + b) was greater while lag time prior to initiation of

gas production was lower for alfalfa relative to fenugreek. In experiment 2, fenugreek harvested at 15 and 19 weeks of age contained less protein than alfalfa. NDF content of fenugreek was highest after 19 weeks of growth. The IVDMD of fenugreek (52.8 and 53.9 %) was greater (P<0.05) than that of alfalfa (47.7 %). Total *in vitro* gas production was similar for forages, yet the rate of gas production was lower (P<0.05) for fenugreek (19 wk) than for alfalfa. The results suggest that the nutritive value of fenugreek forage is such that it may be used as an alternative to alfalfa cut at 10 % bloom. Additional ruminant feeding trials are required to confirm these findings.

	Experiment 1			Experiment 2			
	Fenugreek 9 week of growth	Alfalfa Early bloom	SEM	Fenugreek (age of plant)		Alfalfa Early bloom	SEM
				15 wks	19 wks		
CP (%)	17.3	14.4	0.90	11.6 ^b	11.2 ^b	14.8 ^a	0.14
ADF (%)	29.4	28.8	0.25	34.8	36.7	35.9	1.16
NDF (%)	32.6	40.4	1.20	42.0 ^b	47.3 ^a	43.9 ^b	0.53
Lignin (%)	6.4	8.7	0.27	11.0	10.4	8.0	0.82
Ash (%)	15.4 ^a	8.6 ^b	0.24	10.3	8.7	8.7	0.26
IVDMD (%)	59.5 ^a	47.7 ^b	1.50	52.8 ^a	53.9 ^a	47.7 ^b	1.24
a + b ¹	22.3 ^b	23.4 ^a	0.30	24.5	26.2	25.2	0.51
c ¹	0.110	0.109	0.001	0.108 ^{ab}	0.101 ^b	0.123 ^a	0.005
lag ¹	0.944 ^a	0.615 ^b	0.095	0.324	0.447	0.397	1.11

^{a, b} Means in the same row with different superscripts are significantly different (P<0.05)

¹ a + b is potential gas production (ml/100 mg DM), c is rate constant of gas production (h⁻¹), lag is lag time (h) prior to initiation of gas production in the model $P = a + b(1 - e^{-c(t-l)})$ (McDonald, 1981, J Agric Sci, 96, 251-252).