

Use of *in situ* technique to evaluate three weed forages

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Introduction weed forages are important feed resources for ruminant in pasture of Iran, but there has been limited research on their nutritive value. The appellated feed resources, has become commonly used to design those local feeds, which could replace partially or totally conventional feedstuffs either grass forages or concentrate feeds without reducing livestock performance but should decrease the feeding cost (sallam, 2005). *Cardaria draba*, *Corcus sativus* and *Eruca sativa* are three common weed forages that grow from march to November in pastures of Iran and offered to animals. Empirically, the nutritive value of these forages was confirmed by ranchers, however little information is known about their nutritive values scientifically, thus making it difficult to assess their potential contribution to sustain animal production. So the present study was carried out to determine *in situ* dry matter degradability of three common weed forages in pastures of Iran.

Material and methods Samples of weed forage were collected in March 2009 from Kashmar in the North East of I.R.Iran. The leaves and stems were dried for 48 h at 60 °C. The procedure used to determination of dry matter disappearance was based on the method described by Krskov and McDonald (1979). The bags (pore size of 50 µm) were filled with 5g of samples and put in to the rumen of three ruminant fistulated steers. Steers were fed at maintenance level. The bags were removed at 2, 4, 8, 12, 24, 48, 72 and 96 hours after the start of incubation and each bag was washed immediately with tap water until color disappeared. For the t_0 incubation time, the bags were just washed in the water. *In vitro* disappearance of DM was measured relative to original feed. The rate and extent of DM degradation was estimate according to the equation: $p = a + b(1 - e^{-ct})$. Effective degradability (ED) was calculated according to equation: $ED = a + (b \times c)/(c + k)$, assuming an outflow rate (k) of 0.03 h⁻¹. All data obtained from the trial were subjected to the general linear models procedure of SAS according to a completely randomised design.

Results Obtained data from *in situ* dry matter degradability are given in Table 1. The mean values of dry matter degradation characteristics for three native weed forages are significantly different ($P < 0.05$). Values obtained from the parameter of a, normally considered as a soluble fraction dry matter, of *Eruca sativa* was higher respectively ($P < 0.05$), but the insoluble degradable fraction (b) of *Setaria Spp* was higher than other weed forages. Among the studied weed forages, *Setaria Spp* had lower fraction of c compared to other treatments.

Table 1 Degradation characteristics and disappearance of DM in three weed forages.

	Weed Forages			SEM
	<i>Cardaria draba</i>	<i>Setaria Spp.</i>	<i>Eruca sativa</i>	
Degradation parameters				
a ¹	0.53 ^a	0.35 ^c	0.56 ^a	0.005
b ²	0.30 ^c	0.50 ^a	0.35 ^b	0.001
c ³ /hr	0.106 ^a	0.059 ^b	0.107 ^a	0.004
Effective degradability				
k=0.03	0.767 ^b	0.692 ^c	0.839 ^a	0.002
Disappearance				
24hrs	0.809 ^b	0.758 ^c	0.885 ^a	0.01
48hrs	0.832 ^b	0.831 ^b	0.915 ^a	0.003
72hrs	0.833 ^b	0.843 ^b	0.916 ^a	0.003
96hrs	0.835 ^c	0.870 ^b	0.918 ^a	0.001

^{a,b,c} means along same rows bearing different superscripts are significantly different ($P < 0.05$).

^{1, 2,3} constants in the equation $P=a+b(1-e^{-ct})$ where P = level of degradation at time t; a = readily soluble fraction; b = insoluble fraction but degradable in rumen; c = rate of degradation of b per hour.

Conclusions The differences between dry matter degradability between different sources of weed forages may reflected in their composition. The observed variations in dry matter degradability suggest that the potential of degradability (a+b) and effective degradability of *Eruca sativa* were higher than others. Thus, pasture improvement through incorporation of high quality forages in native pasture (such as *Eruca sativa*) is a solution to ruminant livestock production.

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References

- Krskov, E.R. and I. McDonald. 1979. Journal of Agricultural Science 92: 499-504.
Sallam, S. M. A. 2005. Research Journal of Agriculture and Biological Sciences. 1(2): 200-209.