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*Salsola lanchnantha* *Hammada salicornia*

*Pteropyrum noeantum* *Convolvulus oxyphyllus*

(  
(ADF)

)  
(CP)

(ME)

(DMD)

*Hammada*

(CP)

( )

, *salicornia*

Mj/kg)

(ME)

(

(Torkan *et al.*, 2003)

(Arzani, 2009)

(NDF)

(ADF)

Arzani, )

(Ball *et al.*, 2001 2009

E A

(Arzani, 2009)

(Arzani, 2006)

(Licitra *et al.*, 1997)

(DM)

(NDF)

(ash)

(ADF)

Cook & ) .

(Minson, 1987) (Stubbendieck, 1986

(Arzani *et al.*, 2006 Arzani, 1994)

(Arzani, 1994, 2004, 2005)

(Leen & Matin, 2004)

(DMD)

(CP)

(ME)

Crispim *et* ) .

(*al.*, 2004

(ADF)

(N)

*Brachiaria spp*

(Uniyal *et al.*, 2005) .

CP<sup>1</sup> DM

(Heady & Denis, 1994) .

<sup>2</sup> Neutral detergent fiber(NDF)

<sup>3</sup> Acid detergent fiber (ADF)

<sup>4</sup> Dry matter digestible (DM)

<sup>5</sup> Dry matter digestible (DMD)

<sup>6</sup> Metabolizable energy (ME)

<sup>1</sup> Crude protein (CP)

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Ritch *et al.*, 2006) .

,« »

NDF ADF

(

(Jamie, 1996) .

*Hammada* (Moq.) Iljin

*Salsola* (Botsch.) *Botsch salicornica*

*Convolvulus oxyphyllus* (Boiss.) *lanchnantha*

*Pteropyrum noeanum* (Jaub & Spach)

(Arzani & Naseri., 2005)

-

( )

/ /

Jafari *et al.*, )

(2008

« » (N)

( ) (Calora, 1998)

(CP)

(CP) % = / × N% ( Jafari *et al.*, 2008)

(ADF)

Van Soest, ) (AOAC, 1973)

(Soofi Siavash & Janmohamadi, 2004) (1963

) (Oddy *et al.*, 1983)



*Salsola lanchnantha*  
( Mj/kg)

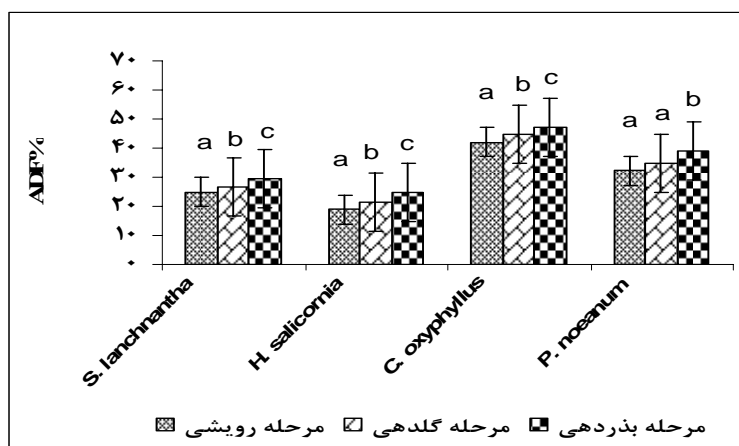
*Hammada salicornia*

F

(ADF)	(ME)	(DMD)	(CP)
**	**	**	**
**	**	**	**
**	**	**	**

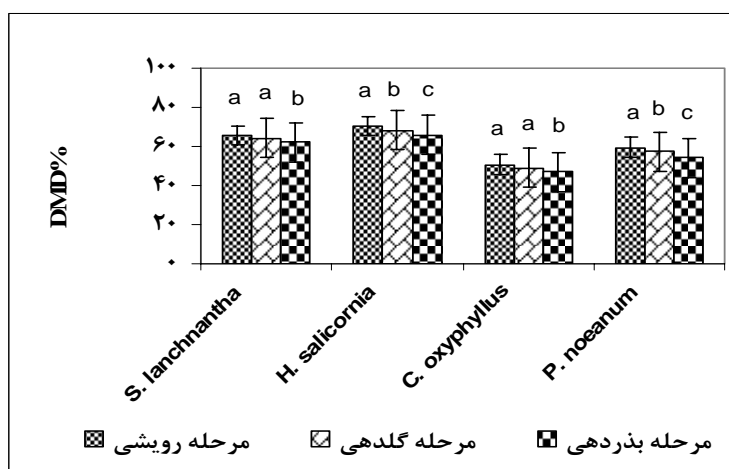
×

\*\*



(%) )

ADF



(%) )

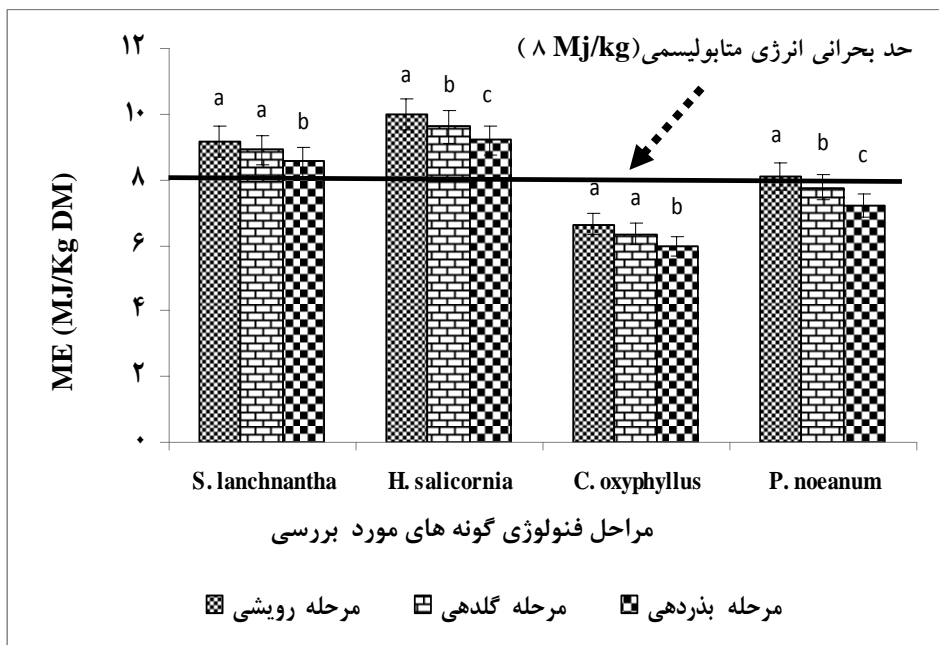
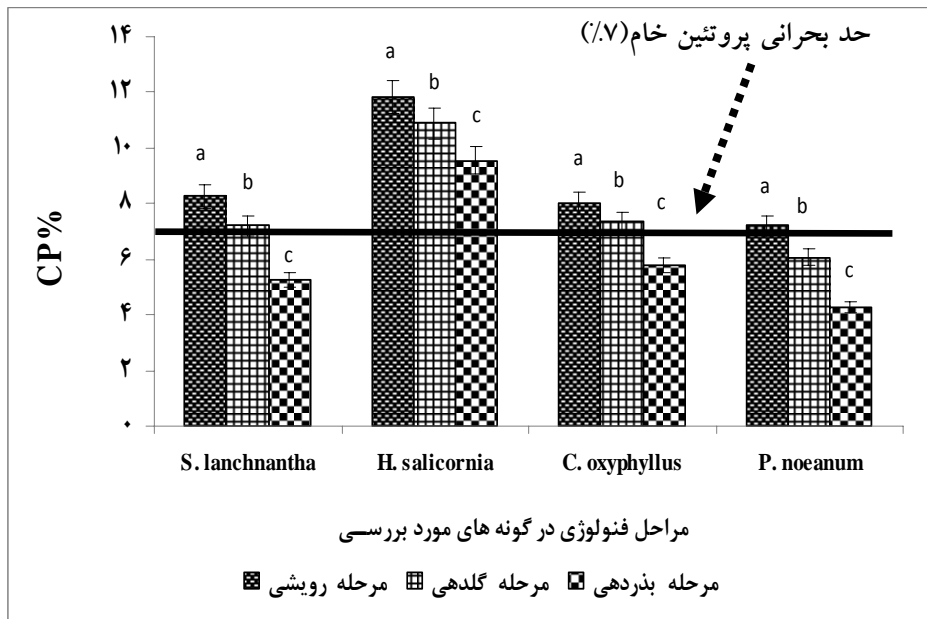
DMD

...

	(CP)	(ADF)	(DMD)	(Mj/Kg DM)
<i>Salsola lanchmantha</i>	/ ± / a	± / a	/ ± / a	/ ± / a
	/ ± / b	± / b	/ ± / b	/ ± / b
	/ ± / c	/ ± / c	/ ± / c	/ ± / c
<i>Hammada salicornia</i>	/ ± / a	/ ± / a	/ ± / a	± / a
	/ ± / b	/ ± / b	/ ± / b	/ ± / b
	/ ± / c	/ ± / c	/ ± / c	/ ± / c
<i>Convolvulus oxyphyllus</i>	/ ± / a	± / a	/ ± / a	/ ± / a
	/ ± / b	± / b	/ ± / b	/ ± / b
	/ ± / c	/ ± / c	/ ± / c	/ ± / c
<i>Pteropyrum noeanum</i>	/ ± / a	/ ± / a	/ ± / a	/ ± / a
	/ ± / b	± / b	/ ± / b	/ ± / b
	/ ± / c	± / c	/ ± / c	/ ± / c

.( )

... c b a



*Pteropyrum noeanum*

(ME)

/ / /

*Convolvulus oxyphyllus*

...

*Salsola*

*Hammada*

*lanchnantha*

/

(CP)

*salicornia*

/ /

(CP)

(CP)

(ME)

(ME)

(Arzani *et al.*, 2004)

*Convolvulus*

(CP)

*oxyphyllus*

(CP)

*Hammada salicornia*

(CP)

(ME)

( )

*Convolvulus oxyphyllus*

(Rodny *et al.*, 1991)

(ME)

(Kempton *et al.*, 1979)

(ME)

(Nikkhah & Mohareri, 1996)

(ME)

ADF

ADF

(ME)

(ME)

(Arzani, 2005)

& ) (Ghorbani & Asadi Alamuti, 2003)

(Soofi Siavash Janmohamadi, 2004)





(CP)

(ME)

*Pteropyrum*

(CP)

*noeanum*

-

(ME)

(CP)

(ME)

(CP)

(DMD)

(DMD)

ADF

(ME)

(Arzani *et al.*, 2006)

- ( )

(Elizalde *et al.*, 1999)

(Jafari *et al.*, 2008)

(DMD)

(ME)

(CP)

(CP)

(ME)

± /

(Pepall, 2007)

/

(Pepall, 2007)

Barrett-)

( )

(Lennard *et al.*, 2003)

( )

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## Forage Quality of Range Species in the Steppe Rangelands of Changuleh, Ilam Province

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### Abstract

One of the important factors to make a balance between number of grazing livestock and grazing capacity is whether forage contains sufficient energy and protein during grazing period or not. Therefore in this study, forage quality was evaluated for important species in steppe rangelands of Changuleh located in Ilam province. To do this, samples from four species of *Hammada salicornia*, *Salsola lanchmantha*, *Convolvulus oxyphyllus* and *Pteropryum noeanum*, those made considerable components of rangelands vegetation in the region, were collected during three phenological stages (active growth, flowering and maturing) over 2008. Then chemical compositions were determined including crude protein (CP), acid detergent fiber (ADF), dray matter digestibility (DMD) and metabolizable energy (ME). According to the results, maximum CP was obtained from *Hammada salicornia* in active growth stage. Crude protein component of this species was more than critical level (7%) for sheep in the maintenance condition. Also in this species, ME was in higher critical level (8 Mj/kg) compared with the other species.

**Keywords:** Forage quality, Crude protein, Dry matter digestibility, Metabolizable energy, Critical level, Phenological stage