

## Effect of forage type and enzyme feed additive on performance of Iranian Holstein cows

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**Introduction** Enzymes are used to improve the nutritive value of feeds for nonruminants. Many experiments showed that enzymes substantially improved feed digestibility and animal performance in sheep and cattle, but results were often inconsistent (yang *et al*, 1999). Various results from recent studies can be contributed to a number of factors including diet composition, type of enzyme preparation, complement of enzyme activities, amount of enzyme provided, enzyme stability, and method of application (Schingoethe *et al*, 1999). Some experiments showed that type of forage and grains in rations can be as an important factor for effecting enzyme in diets (Beauchemin *et al*, 1999). The objectives of this experiment were to determine the effects of type of forage (Corn silage vs. barley silage) in diets with and without mixture enzyme in the diets of dairy cows on food intake, milk production, and milk production.

**Materials and methods** Eight lactating Holstein cows were used in this study. At the start of the experiment, cows averaged 68.4±5.8 DIM and 43.8±0.6 milk production were housed in individual tie stalls. Cows were milked three times daily 05.00, 13.00 and 21.00. Cows were offered total mixed rations two times daily at 08.00 and 17.00 for ad libitum intake. They were turned out side 3 hours daily except during digestibility measurements. The experimental design was replicated 4×4 Latin square with four 21 days periods. Each period consisted of 14 days adaptation to diets and 7 days of experimental measurements. Each period, cows received one of four diets. The four diets were consisted of 35% forages include 20% alfalfa hay and 15% barley silage or corn silage. The concentrate contain 1 gr of enzyme per 1 kg DM. the enzyme mixture was a mixture of cellulase, xylanase, B-glucanase, A-amylase, protease, pectinase and phytase (NATUZYME, Bioproton, Au). Feed offered andorts were measured and recorded daily to calculate feed intake. Milk samples were taken two last days of each experimental period and sent to the central Mashhad milk testing laboratory for milk fat, cp and lactose determination. Data were analyzed using the GLM procedure of SAS 9.1 to determine the effects of cow, period and diet. Means were compared using Duncan test (P<0.05).

**Results** Table 1 show DMI, Milk yield and milk fat, protein, lactose, and solid non fat percentage in cows offered different types of silage as forages with or without enzyme. DMI, protein, lactose, and solid non fat percentage showed no significant difference except fat percentage which was significantly higher for barley silage vs. corn silage. There were also no clear trends between treatments.

**Table 1** Effect of forage type and exotic enzyme on DMI and milk constituents

Items	Treatments				SEM	A <sup>1</sup>	S <sup>2</sup>	A×S
	Corn silage		Barley silage					
	No Enzyme	Enzyme	No Enzyme	Enzyme				
Dry matter intake (Kg/day)	23.64	23.71	23.57	23.63	6.28	0.71	0.62	0.58
Milk yield (Kg/day)	37.00	36.60	36.90	36.80	0.41	0.64	0.45	0.53
Milk fat (%)	3.18	2.98	3.36	3.38	0.14	0.62	0.05	0.52
Milk protein (%)	3.05	3.03	3.04	3.04	0.10	0.38	0.70	0.54
Milk lactose (%)	4.61	4.66	4.62	4.65	0.09	0.58	0.77	0.80
Solid non fat (%)	8.37	8.41	8.36	8.39	0.21	0.56	0.77	0.80

Items with different letter in each row have significant difference (P<0.05).

1- A: Additive pvalue 2- S: Silage pvalue

**Conclusion** It seems that barley silage had more effect on the milk fat percentage in comparison with enzyme supplementation.

### References

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