Effects of lactic acid bacteria on the quality of *Achnatherum splendens* silage

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Introduction

Achnatherum splendens is an important forage for ruminant animals, but it has a high fiber content, and there is little information about the quality of *Achnatherum splendens* silage. This experiment was undertaken to study the effects of lactic acid bacteria on the quality of *Achnatherum splendens* (AS) silage.

Materials and methods

The AS was harvested at pre-bud stage and immediately cut into 1~2cm pieces. The AS was ensiled with lactic acid bacteria (LAB1 2.5 g/t, LAB2 5.0 g/t, 5×10^5CFU/g FW) and without LAB as control (CK). The three bagged AFR silages of each treatment were stored at room temperature and sampled for analyzing quality at 60d.

Results

The water soluble carbohydrate (WSC), crude protein (CP) and neutral detergent fibre (NDF) content, buffering capacity, and in vitro digestibility of silage material were 56.29 g/kg, 139.36 g/kg, 655.77 g/kg, 126.97 mE/kg, and 456.03 g/kg. The pH of the silage treated with LAB was significant lower and the LA content was significant higher than control (P<0.01), but the acetic acid (AA) content, and NH3-N/TN was not significant between treatments (P>0.01). There was no PA and BA in the silage. Adding LAB to the silage can significantly increase the IVDMD compared with control (P<0.01). When treated with LAB, the DM, CP, NDF and ADF contents in the silage were no different from the control.

Conclusion

The fermentation quality of the control was poor. The pH was significantly reduced (P<0.05) and the content of lactic acid and the In vitro digestibility of DM were significantly increased (P<0.05) in the silage when lactic acid bacteria were added compared with the control. Adding lactic acid bacteria to *Achnatherum splendens* silage has the capacity to improve the quality of the silage.

Table 1. Mean chemical composition (g/kg), buffering capacity (mE/kg) and *in vitro* digestibility (g/kg) of the silage material

DM	WSC	CP	NDF	ADF	ADL	BC	IVDDM
408.04	56.29	139.36	655.77	364.24	74.45	126.98	456.03

Table 2. The fermentation quality (g/kg), chemical composition (g/kg) and in vitro digestibility (g/kg) of *Achnatherum splendens* silage. Means in the same row whit different letters differ significantly (P<0.01).

Treatments	pH	LA	AA	PA	BA	NH3-N/TN	DM	CP	NDF	ADF	ADL	IVDMD
CK	4.57 a	7.35 b	1.68	0	0	198.62	391.19	142.16	651.94	362.69	72.98 b	481.57 b
LAB1	4.33 b	11.82 a	2.41	0	0	194.98	400.40	141.87	647.68	363.72	85.94 a	509.71 a
LAB2	4.26 b	9.35 b	1.78	0	0	189.49	415.73	142.15	650.47	362.72	75.05 b	488.25 b
SE	0.03	0.55	0.32	0	0	3.10	5.71	1.11	4.20	2.93	0.85	3.75