Reconstituted alfalfa hay in starter feed improves skeletal growth of dairy calves during preweaning

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INTRODUCTION

Little is known regarding effects of reconstitution of alfalfa hay on starter feed intake, weight gain, and skeletal growth of dairy calves.

AIM

The aim of the present study was to evaluate the effects of feeding starter feed containing dry (AH) vs. reconstituted (RAH) alfalfa hay at 10% of dietary dry matter on health status of calves during the pre-weaning period.

METHODS

Twenty newborn Holstein male calves were used to determine the effect of reconstitution of alfalfa hay on feed intake and growth performance during the pre-weaning period. Calves were offered milk at 6 L/d from d 3 to d 43, 4 L/d from d 44 to d 46, and 2 L/d from d 47 to d 49 of age)Hay was reconstituted with water 24 h before feeding. The offered and refused amounts of starter feed were individually and daily recorded.

calves measurements	0day	10 day	20day	30day	40day	50day
	weight, hip width, hip height, body barrel, body length, withers height, heart girth	weight, hip width, hip height, body barrel, body length, withers height, heart girth	weight, hip width, hip height, body barrel, body length, withers height, heart girth	weight, hip width, hip height, body barrel, body length, withers height, heart girth	weight, hip width, hip height, body barrel, body length, withers height, heart girth	weight, hip width, hip height, body barrel, body length, withers height, heart girth

STATISTICAL ANALYSIS: Data were subjected to ANOVA using the MIXED MODEL procedure of SAS (PROC MIXED, SAS 9.4, SAS Inc., Cary, NC) with time (day) as repeated measures for starter feed intake, total dry matter intake (DMI), average daily gain (ADG), feed efficiency, and skeletal growth. Data on body weight were analyzed using the same model without the time effect.

Table 1. Nutrient intake as influenced by feeding dry- (AH) vs. reconstituted alfalfa hay (RAH) to Holstein dairy calves.

	Diet (D)			P-value		
Item	AH	RAH	SEM	D	Time (T)	D × T
Starter DM[1] intake, kg/d	0.34	0.42	0.06	0.39	0.001	0.60
Total DM intake, kg/d	1.03	1.11	0.06	0.38	0.001	0.58
ADG, kg/d	0.56	0.61	0.04	0.42	0.001	0.48
Feed efficiency[2]	0.54	0.55	0.02	0.81	0.001	0.73

[1]DM = dry matter.
[2]ADG= average daily gain.
[3]Feed efficiency was calculated by dividing average daily gain by average total DM intake (milk DM + starter feed DM).

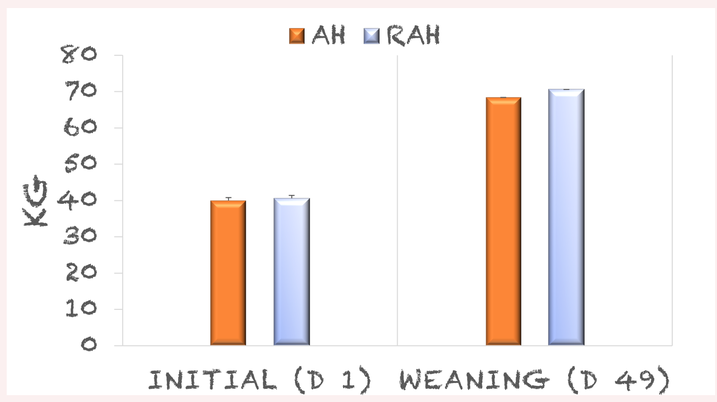

Figure 1. Body weight as influenced by feeding dry- (AH) vs. reconstituted alfalfa hay (RAH) to Holstein dairy calves.

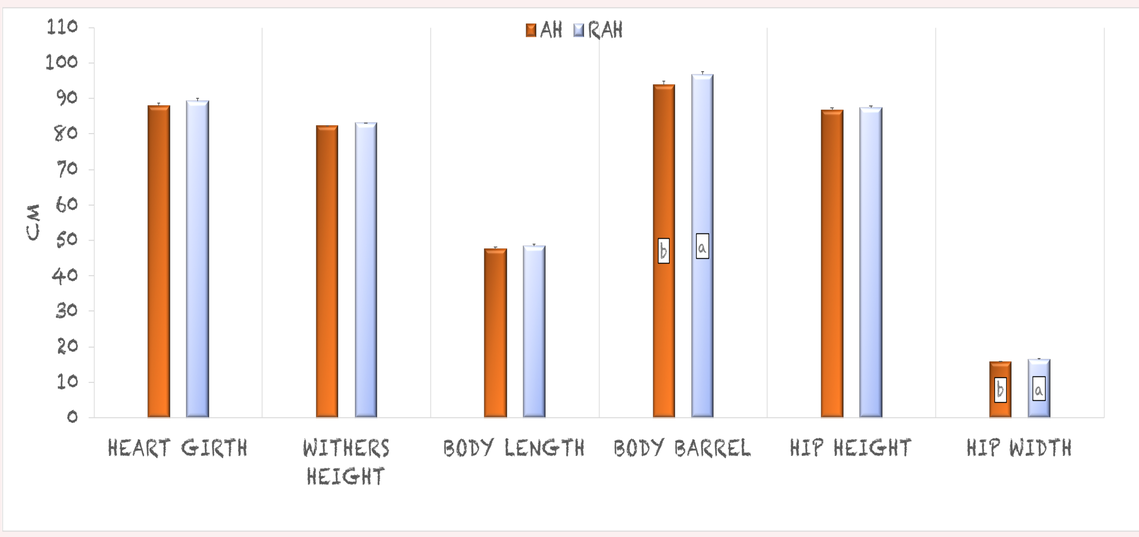

Figure 2. Skeletal size as influenced by feeding dry- (AH) vs. reconstituted alfalfa hay (RAH) to Holstein dairy calves.

In conclusion...

Calves fed AH vs. RAH gained less hip width (15.8 vs. 16.4; $P = 0.03$) and body barrel (93.9 vs. 96.7; $P = 0.05$); however, other skeletal measurements were not affected by treatment. As a result, feeding RAH had a minimal effect on growth performance of pre-weaned dairy calves despite an improvement in hip width and body barrel gains.