Reconstituted alfalfa hay in starter feed improves health status of dairy calves during pre-weaning

S. Kargar, M. Kanani, M. G. Ciliberti, M. Albenzio, A. della Malva, A. Santillo, and M. Caroprese

1Department of Animal Science, School of Agriculture, Shiraz University, Shiraz 71441-66186, Iran, skargar@shirazu.ac.ir
2Department of the Sciences of Agriculture, Food and Environment (SAFE), University of Foggia, Via Napoli, 26, 71122 Foggia, Italy

INTRODUCTION

Little is known regarding the effects of feeding reconstituted vs. dry alfalfa hay to dairy calves on health criteria. Twenty neonate Holstein male calves were used to investigate the effect of feeding reconstituted vs. dry alfalfa hay on health status.

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

Calves were offered milk at 6 L/d from d 3 to d 9, 4 L/d from d 10 to d 46, and 2 L/d from d 47 to d 49 of age. Hay was reconstituted with water 24 h before feeding. Health status and respiratory illness were monitored several times daily. Health scores were recorded once daily. Fecal score Scale 1 (normal and well formed) to 6 (watery, mucous, and bloody). Respiratory score Scale from 1 (normal) to 6 (wet cough).

Diarrhea, Pneumonia, Respiratory score ≥2

Statistical analysis: Models for occurrence of diarrhea, respiratory illness and need for medication by logistic regression using a binomial distribution in the GLIMMIX procedure in SAS were evaluated. Frequency and duration of diarrhea, respiratory illness and administration of medication with a Poisson distribution using the GENMOD procedure of SAS were tested.

Feeding RAH improves health status through decreasing the occurrence of diarrhea and respiratory illness.

Table 1. Logistic models for diarrhea (≥2), pneumonia, and medication occurrence during the pre-weaning (d 1 to 49) period as influenced by feeding dry (AH) vs reconstituted alfalfa hay (RAH) to Holstein dairy calves.

<table>
<thead>
<tr>
<th>Variable and comparison</th>
<th>Coefficient</th>
<th>SEM</th>
<th>Odds ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhea occurrence</td>
<td>0.7066</td>
<td>0.26</td>
<td>2.02</td>
<td>1.20, 3.40</td>
<td>0.007</td>
</tr>
<tr>
<td>Pneumonia occurrence</td>
<td>15.564</td>
<td>0.63</td>
<td>4.74</td>
<td>1.35, 6.59</td>
<td>0.01</td>
</tr>
<tr>
<td>Medication occurrence</td>
<td>-0.7066</td>
<td>0.26</td>
<td>0.49</td>
<td>0.29, 0.83</td>
<td>0.007</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>-1.5564</td>
<td>0.21</td>
<td>0.21</td>
<td>0.06, 0.73</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Where 1 = normal; 2 = soft to loose; 3 = loose to watery; 4 = watery, mucous; 5 = slightly bloody; 6 = watery, mucous, and bloody.

The odds ratio (OR) indicates the probability of either having diarrhea (≥2), pneumonia, or needing medication for the AH vs. RAH diet. If the OR is ≥1, the AH diet is more likely to have diarrhea (≥2), pneumonia or to be medicated than the RAH diet by a factor of the difference above 1. If the OR is < 1, the AH diet has a lower probability of occurrence than the RAH diet.