THE EFFECT OF THE MOISTURE CONTENT OF DIETS ON THE PAROTID SECRETION OF SHEEP

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Summary

The daily secretion of parotid saliva secreted by two sheep was recorded on diets of fresh and dried pasture. When the dry matter intake was held constant, the parotid salivation was the same on the fresh pasture as on the dried pasture.

I. INTRODUCTION

It has been the opinion of many authors (e.g. Sharma 1936; Weiss 1953; Denton 1956) that the volume of saliva secreted by ruminants is greater when they are fed on dry rough foods than when they are fed on succulent foods. However, Bailey and Balch (1961) and Bailey (1961) have found that the secretion of mixed saliva by cows during rest and eating was similar on a diet of fresh grass to that on a diet of hay.

II. EXPERIMENTAL

In this experiment, two Merino sheep, each with a permanent unilateral parotid fistula, were used to record the daily secretion of parotid saliva. Both sheep were confined in metabolism cages which allowed the quantitative collection of saliva. Evaporative losses were assumed to be constant over the experimental period.

A succulent and leafy pasture, consisting mainly of Wimmera rye grass and subterranean clover was cut daily and fed to these sheep under the following conditions. One sheep was fed freshly cut pasture estimated to contain 800 g of dry matter. The dry matter content of the pasture was 20 per cent. for most of the experiment, so that approximately 4,000 g of fresh pasture was offered. A similar quantity of freshly cut pasture was dried for 24 hr at 105 °C, and 800 g of this dried pasture was fed daily to the other sheep. The sheep were fed these rations for three weeks, after which the diets were reversed. Both sheep were then fed a daily ration of 800 g of freshly cut pasture. During this section of the experiment, the dry matter of the pasture rose to 30 per cent., so that the ration contained approximately 230 g of dry matter.

III. RESULTS AND DISCUSSION

The mean daily volume of parotid saliva for each sheep on each diet is shown in Table 1.

When sheep 373 was fed 800 g of dry-matter/day, the same volume of parotid saliva was secreted, irrespective of whether fresh or dried pasture was fed. With sheep 370, at 800 g dry-matter intake, 0·5 l. more saliva was secreted when

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The mean volume of parotid saliva secreted on diets of fresh and dried pasture, and the corresponding daily intake of dry matter

<table>
<thead>
<tr>
<th>Sheep</th>
<th>Fresh Pasture</th>
<th>Dried Pasture</th>
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<tbody>
<tr>
<td></td>
<td>Saliva (L)</td>
<td>D.M. Intake (g)</td>
</tr>
<tr>
<td>370</td>
<td>4.05 ± 0.058*</td>
<td>820</td>
</tr>
<tr>
<td></td>
<td>1.38</td>
<td>210</td>
</tr>
<tr>
<td>373</td>
<td>3.32 ± 0.041</td>
<td>870</td>
</tr>
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<td></td>
<td>1.30</td>
<td>250</td>
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</table>

* Standard Error.

It was fed on fresh pasture than on the dried pasture. Moreover the volumes of saliva recorded in this experiment were similar to those recorded in another experiment with the same sheep fed a ration of stalky hay. When fed 800 g of this hay (10 per cent. moisture), the volumes of parotid saliva recorded were 3.22 ± 0.05 L and 3.78 ± 0.06 L for sheep 370 and 373 respectively. When only 800 g of fresh pasture was fed to these sheep daily volumes of parotid saliva fell to 1.38 and 1.30 L for sheep 370 and 373 respectively.

Therefore, it is probable that the parotid salivary secretion in sheep is not affected by the moisture content or roughness of the diet. It is evident that for parotid salivation, the quantity of dry-matter in the food is more important than the nature of the food. Physiological work on the stimulation of parotid secretion (Ash and Kay 1959) has indicated that mechanical rather than chemical factors are the chief stimulants to parotid salivation. It would appear, from the results of this experiment, that succulent herbage provides ample mechanical stimulation for the maintenance of normal salivary secretion.

IV. ACKNOWLEDGEMENTS

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V. REFERENCES