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A study of the daily feed intake pattern in sheep fed orchard grass hay or silage *ad libitum*

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The mechanisms involved in the control of intake of grass silages are still not well known (Dulphy and Demarquilly, 1991). In order to better understand differences in daily voluntary intake (VI), the daily intake patterns were compared for the same plant harvested either as hay or as silage.

Six wethers (60 kg) were fed *ad libitum* once daily orchard grass harvested at the same date, either as hay (H; organic matter digestibility (OMd) = 64.3), as fine chopped silage without preservative (S, OMd = 64.3) or with the addition of formic acid (SA, OMd = 67.9) according to two 3·3 latin-square designs. The daily evolution in intake was recorded for 5–8 d per sheep and per forage as described by Baumont *et al* (1990). Results were expressed as DM intake for each of the 24 h. To determine the hours which explain differences in VI, the 24-h patterns ($n = 119$) were submitted to a factorial discriminant analysis with the effect of the nature of forage (3 levels).

VI differed significantly between H, SA and S (1 469a, 1 241b and 1 054b g DM respectively; $a \neq b$, $P < 0.05$). Factorial discriminant analysis revealed that the larger intake of hay was mainly related to the 2nd h post-feeding (10:00) and to the period from 15:00 to 19:00 h (fig 1). The intakes during these hours were well correlated to the 1st axis of the analysis which explained 89.2% of the total variance. 83.2% of the patterns were automatically well classified by the analysis. During the 1st h post-feeding the silages were eaten as well as the hay. This may indicate that palatability is not the causative factor of their

lower intake. However, some satiation signals may act more strongly during the 2nd h and later on with grass silage, causing its lower level of intake compared to hay.

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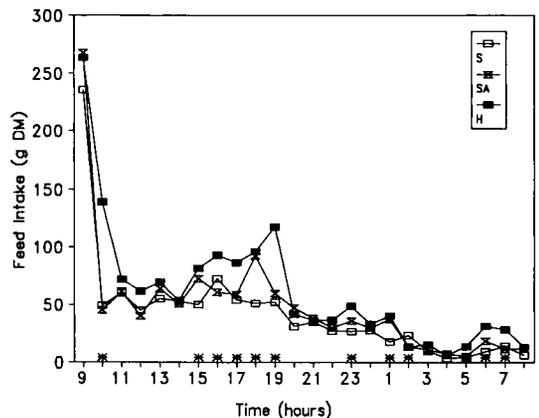


Fig 1. Intake patterns of 6 sheep fed orchard grass either as hay (H), or as silage without preservative (S) or with formic acid (SA). The asterisks indicate the hours during which intake was significantly different between forages ($P < 0.05$).