

## DEFLEECING SHEEP WITH MIMOSINE : EFFECTS OF NUTRITION

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Mimosine is potentially useful as a chemical defleecing agent for sheep (Reis *et al.* 1975). Evidence is presented in this paper that the nutritional state of sheep can influence the amount of mimosine required to defleece them. Sheep were given ground and pelleted diets consisting of either (1) lucerne (3 parts) and oat grain (2 parts), or (2) diet 1 (6 parts) and formaldehyde-treated casein (1 part). Intravenous infusions of mimosine were given for 2 days at a steady rate (Reis *et al.* 1975), following various nutritional treatments.

TABLE 1. Effectiveness of mimosine for defleecing sheep.

| Nutritional treatment prior to mimosine infusion         | Mimosine infusion rate (mg/kg/d) | No. of sheep dosed | No. of sheep defleeced |
|--|----------------------------------|--------------------|------------------------|
| Diet 1, 600 g/d, 6 weeks                                 | 80                               | 8                  | 8                      |
| Diet 2, 1200 g/d, 3 weeks                                | 80                               | 10                 | 0                      |
| Diet 1, 1030 g/d plus casein/abomasum, 170 g/d } 3 weeks | 80                               | 4                  | 0                      |
| Diet 2, 1200 g/d, 1 week                                 | 80                               | 4                  | 0                      |
| Diet 2, 600 g/d, 1 week                                  | 80                               | 3                  | 3                      |
| Diet 2, 1200 g/d, 1 week                                 | 120                              | 3                  | 2                      |
| Diet 2, 1200 g/d, 2 weeks; 4-day fast                    | 80                               | 4                  | 4                      |
| Diet 1, 600 g/d, 6 weeks; 4-day fast                     | 40                               | 4                  | 3                      |

With sheep consuming 600 g/d diet 1, an intravenous infusion of mimosine (referred to as the standard infusion) produced consistent defleecing when given at a dose rate of 80 mg/kg/d for 2 days (Table 1). Lower amounts of mimosine were not effective for defleecing. A 3-week pre-treatment period of feeding diet 2 (1200 g/d), or of infusing an equivalent amount of casein (170 g/d) into the abomasum, completely prevented defleecing with the standard mimosine infusion (Table 1). The same effect was obtained, in four sheep, with a 1-week pre-feeding period of diet 2 (1200 g/d), but the pre-feeding of only 600 g/d of diet 2 to three sheep for 1 week failed to prevent defleecing with the standard infusion (Table 1). Preliminary results indicate that the failure of the standard infusion to produce defleecing following these nutritional treatments was associated with reduced levels of mimosine in blood plasma. Defleecing could be achieved following pre-feeding with 1200 g/d of diet 2 by increasing the amount of mimosine infused to 120 mg/kg/d, or by fasting the sheep for 4 days, commencing the fast 3 days before the start of mimosine infusion (Table 1). Fasting for 4 days as described above reduces the amount of mimosine required to defleece a sheep; three out of four sheep previously consuming 600 g/d diet 1 were defleeced following an infusion of only 40 mg/kg/d (Table 1).

These results indicate that, compared with sheep on moderate feed intakes, sheep on high intakes, especially those absorbing large amounts of amino acids, will require larger amounts of mimosine to defleece them. Fasting prior to dosing obviates the effects of previous nutrition.

REIS, P.J., TUNKS, D.A., and CHAPMAN, R.E. (1975). *Aust. J. Biol. Sci.* 28: 69.

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