

## **Preventing Calcium Deficiency in Late Pregnant Ewes**

## **Role of calcium**

Maintaining adequate nutrition during pregnancy is important to prevent health complications and poor foetal development. One of the main complications in ewes is hypocalcaemia (milk fever) due to insufficient calcium in the diet in the last two months of pregnancy and early lactation. It is the result of increased demand for calcium during bone development in the foetus and lamb<sup>1,2,3</sup>.

Signs include a stiffened gait, muscle tremors, weakness, fatigue, stupor, inability to stand, and eventual death in 1-3 days if not treated. Diagnosis is based on feeding history, pregnancy status, age, appearance, and response to treatment. Ewes suffering from early-stage hypocalcaemia may respond quickly to calcium gel given orally and calcium borogluconate (CBG) solution injected under the skin. In addition, pasture and blood samples can be used to both predict the risk and confirm hypocalcaemia.

Calcium is typically low in grain, grass hay, dry pasture, and short green feed due to suppression by excess phosphate content<sup>1,4</sup>. High grain diets for more than 6 weeks are prone to causing hypolcalcaemia. Bone is the main store of calcium and up to 20% of the ewe's needs are met by bone reserves during pregnancy, but this is insufficient in late pregnancy and lactation where the need for calcium is almost doubled<sup>1,2</sup>.

As a result, it is difficult for autumn/winter lambing ewes to absorb enough calcium in the last 6 weeks of pregnancy. This is further compounded in older ewes as they are less able to absorb, retain, and mobilize calcium from their diet<sup>7</sup>. Maintaining ewes in condition score 3 also reduces the risk as ewes in a score below or above this are also less able to absorb and mobilize calcium<sup>8</sup>.

Lambs born to ewes with low-calcium milk will not achieve the 150 g/day growth rate considered necessary to prevent weak bones and calcium deficiency post-weaning<sup>9</sup>. If they fail to accrete sufficient calcium by 18 months of age, they are likely to be at risk to hypocalcaemia later in life<sup>10</sup>.

It takes ewes 3-4 months of grazing on calcium-sufficient pasture to re-establish adequate calcium stores post-weaning. Ewes become more prone to hypocalcaemia with age and failure to replenish their calcium stores between successive pregnancies when they are fed inbalanced diets deficient in calcium. A preventative management strategy is to provide supplements high in available calcium both during pregnancy and lactation.

## Prevention

Hypocalcaemia can be prevented by supplementing calcium at 3-4gm/kg dry matter (DM) for single bearing ewes and 5-6 gm/kg DM for those with twins and triplets<sup>5,6</sup>. Supplementation should commence at least 6 weeks before lambing and may be achieved by providing a 50:50 stock lime and salt mix, legume-based forages, or specifically formulated pre-lambing blocks and licks<sup>3,4</sup>.

It is also important to provide shelter, avoid grazing oxalate containing plants, and limit mustering, yarding, drenching, and crutching in late pregnancy. These stressors increase the incidence of hypocalcaemia as less time spent grazing means reduced calcium intake<sup>1,4,5,6</sup>.

## **References:**

- Abdelrahman, M. M. 2008, 'The Effect of High Calcium Intake by Pregnant Awassi Ewes at Late Gestation on Mineral Status and Performance of Ewes and Newborn Lambs', *Livestock Science*, vol. 117, no. 1, pp 15-23.
- 2. Cockroft, P. D. and Whitley, P. 1999,' Hypocalcaemia in 23 ataxic/recumbent ewes: clinical signs and likelihood ratios', *Veterinary Research'*, vol. 144, no. 19, pp.529-532.
- Fthenakis, G. Arsenos, G. Brozos, C. Fragkoua, A. Giadinis, N. D. Giannenas, L. Mavrogianni, V. S. Papadopoulos, E. and Valasi, a. 2012,' Health Management of Ewes During Pregnancy', *Animal Reproduction Science*', vol. 130, no. 3-4, pp. 198-212.
- Brozos, C. Mavrogianni, V. S. and Fthenakis, G. 2011,' Treatment and Control of Peri-Parturient Metabolic Diseases: P regnancy Toxemia, Hypocalcemia, Hypomagnesemia', *Veterinary Clinics: Food Animal Practice*, vol. 27, no.15, pp. 105-113.
- 5. Chiba, L. Jurgens, Kott, Kellems, and Church, 2014,' Sheep Nutrition and Feeding', *Animal Nutrition Handbook*, vol. 1, no. 16, pp. 520-540.
- 6. Kenyon, P. R. and Cranston, L. M. 2017, 'Advances in Sheep Welfare: Nutritional Management', *Herd and Flock Welfare*, vol. 1, no. 8, pp. 153-175.
- Wilson GF. The DCAD concept and its relevance to grazing sheep. Proceedings of Society of sheep and beef cattle veterinarians of the New Zealand Veterinary Association, annual seminar. 1999:149-155.
- 8. Ensminger ME, Oldfield JE, Heinmann WW. Calcium. In 'Feeds & Nutrition (2nd ed)'. The Ensminger Publishing Company, Clovis, California, 1990;96-98.
- 9. Heath JA. Calcium homeostasis and bone formation in the fetal and neonatal lamb. PhD thesis, University of Melbourne, Australia. 1990.
- 10. Caple I. Hypocalcaemia and osteoporosis in lambs and weaners. D Jordon (ed) Proceedings of the Australian Sheep veterinary Society AVA Conference, Canberra. 1994;56-60.

