An unknown photosensitivity in lambs

A Watts
Vetlife Alexandra, 123 Centennial Avenue, Alexandra

During a routine farm visit the comment was made “what did I know about lambs ears falling off?”

A farmer in Lumsden, Southland with Coopworth ewes, has on annual basis has a proportion of lambs, some years up to 90% of a mob affected to some degree. Clinical signs initially present at tailing time with swelling and thickening of ears which progress to reddish-black scabs at ear margins, partial to complete loss of ears, and some may have wool loss with reddened skin and scab formation of the back.

Affected mobs only graze on specific paddocks on the farm – areas of undeveloped hill pasture. Following further investigation other farmers in the same district can experience a similar problem but it is limited to specific paddocks as well. Ewes and cattle do not seem to exhibit signs of photosensitivity when grazing on the same pasture at the same time.

Serum samples taken from affected lambs, taken December 2012, showed normal to very slightly elevated liver enzymes (GGT and GDH), and normal to slightly low B12 concentrations. This indicates that the photosensitivity mechanism is most likely to be primary, i.e. lambs had ingested some or other known or unknown phototoxic weed or other pasture component. A search of pasture for known plants associated with photosensitivity, such as St John’s wort, and ones known to contain furanocoumarins, such as wild parsnip, parsley, hogweed and celery, which are all members of the carrot family (Apiaceae, previously Umbelliferae), was therefore undertaken.

None of the above plants were present. However, a low-growing plant with carrot like leaves and small white flowers, that had obviously been grazed, was found growing in profusion beneath the thorny shrub, Matagouri (Discaria toumatou). Samples of the plants were collected and sent to Massey University for identification. Dr Kerry Harrington and colleagues identified the weed as Anthriscus caucalis (familt Apiaceae), also known as beaked parsley or bur chervil. Little is known about this plant, there are no reports of photoactive furanocoumarins in other Anthriscus spp. Although the ultimate test to establish a plant’s capacity to cause photosensitivity would be feeding trials in lambs, it was decided to first investigate the possibility that harvested plant material contained furanocoumarins. The phototoxic action spectrum of furanocoumarins lies within the long-wave ultraviolet, also known as UVA or black light, range. A simple microbiological test, using sugar test agar plants seeded with a culture of Candida albicans and with small fragments (refrigerated or air-dried leaves, stems and flowers) of beaked parsley, as well as known furanocoumarin-containing plants or derivatives (lime, lemon, parsnip, oil of Bergamot), applied directly to the agar surface. Test plates were irradiated for 24-48 hours at room temperature using 15 W black light fluorescent tubes in the dark. Duplicate plates comprising the same test materials were incubated in total darkness in the same room.

The plates were inspected at 24 and 48 hours. Plant material is considered to have phototoxic capability if the Candida growth inhibition is greater in the irradiated than in the non-irradiated sample. Growth inhibition was obvious with the lime, lemon, parsnip and oil of Bergamont samples but was absent with the A.caucalis material. It should be noted that the microbiological test is not sensitive to all phototoxins, and would not detect toxins with an action spectrum within that of visible light, such as hypericin found in St John’s wort.

Dried, finely ground A. caucalis was also sent to Dr Steve Colegate at the Poisonous Plant Research Laboratory,
Logan, Utah, USA, for furanocoumarin analysis. None were detected.

The negative findings regarding furanocoumarins do not exclude the possibility that *A. caucalis* could be phototoxic. Feeding trials would be necessary to establish this. A more focused and intensive search is required to find the cause.

**References**


Rowe LD, Norman JO. Detection of phototoxic activity in plant specimens associated with primary photosensitization in livestock using a simple microbiological test. *Journal of Veterinary Diagnostic Investigation* 1, 269-270, 1989