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Photosensitisation in stock

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What is photosensitisation?

Photosensitisation is an ailment in which the skin becomes abnormally sensitive to bright sunlight after stock have eaten certain toxic plants. Severe skin damage may result.

Causes

Primary photosensitisation – ingestion of plants that contain light-sensitive substances

Some plants contain compounds which become toxic when activated by light. St John's wort is one such plant which has glands on leaves, stems and petals containing the light-sensitive compound hypericin.

If enough compound accumulates in blood vessels at the surface of exposed skin, sunlight transforms it into a toxin and skin damage results.

Secondary photosensitisation – liver damage from toxins

The green pigment chlorophyll in plants is metabolised in the animal to a light-sensitive compound phylloerythrin. The liver excretes phylloerythrin in bile to the intestine. When the liver is damaged, phylloerythrin cannot be excreted and it builds up in the bloodstream.

If a sufficient quantity of phylloerythrin is present in the blood vessels at the surface of exposed skin, sunlight transforms the phylloerythrin into a toxin which severely damages the skin.

Miscellaneous

There are many cases where the precise cause of photosensitisation is not clear but can be associated with the grazing of canola, kale, grazing oats, medics and lucerne.

Common specific causes

Some of the common specific causes include the following.

Plant toxins that cause primary photosensitisation

- St John's wort (*Hypericum perforatum*)
- Buckwheat (*Polygonum fagopyrum*)

Plant toxins that cause liver damage and secondary photosensitisation

- Hairy panic (*Panicum effusum*)
- Sweet grass (*Panicum laevifolium*)
- Caltrop (*Tribulus terrestris*)

Other toxins that cause liver damage and possibly secondary photosensitisation

- Heliotrope (*Heliotropium europaeum*)
- Paterson's curse (*Echium plantagineum*)
- Lantana (*Lantana camara*)
- Fungus of facial eczema (*Pithomyces chartarum*)
- Fungus of lupinosis (*Phomopsis leptostromiformis*)
- Blue-green algae (*Anacystis cyanea*)

Signs

Only those areas exposed to sunlight will be affected, that is, non-pigmented skin with little hair or wool cover.

- In sheep, the face, ears and muzzle are the worst affected areas; however, recently shorn sheep can be affected over the whole body.
- In cattle, skin damage also occurs along the back and on the sides of the udder that are exposed to the sun, with damage limited to the white areas and sparing of the coloured areas being characteristic.

Signs of photosensitisation

- The skin becomes red, weepy and swollen.
- Swelling causes the ears to droop and eyelids to close.
- There may be swelling under the jaws.
- The animal may have difficulty breathing when there is extensive swelling around the nostrils and throat.
- Swollen lips make it difficult for the animal to eat.
- In the most severe cases the surface skin may crack, die and turn black. This dead skin may slough off.
- There is intense irritation and pain. Animals will be agitated, scratch and rub against fixed objects, shake their head, seek shade and lose their appetite.
- Affected cattle will have a sharp drop in milk production.
- Cows with their udder affected will often kick at their belly and seek relief by standing in a dam.

This ewe is suffering from photosensitisation after grazing wheat. Pre-existing liver damage from ingestion of Paterson's curse may have been the underlying cause in this case. Notice the damaged and dying skin around the eye, down the face, on the nose, lips and ear. The ear is swollen and droopy. The eyelids and lips are swollen and there is mucous discharge from the eye and nose. (Photo: S. Robson)

The extent of skin damage depends on the amount and type of toxic plant ingested, the stage of growth of the plant and the degree of exposure to the sun. Where there is liver damage, affected animals may develop jaundice and become yellowish in the skin, gums and within the eyes. In severe cases of photosensitisation the animal may go into shock. Many of the more severely affected animals will die.

In cases where there is primary photosensitisation due to light-sensitive toxins in the plant, signs will appear within 2–3 days of ingestion of toxic plants, and new cases will improve within 4–5 days of removal from the toxic plants.

In cases of secondary photosensitisation associated with liver damage, signs may occur some weeks after the animals have been removed from the toxic plants.

Diagnosis

The location and appearance of skin damage and shade-seeking behaviour is characteristic of photosensitisation. The condition is diagnosed on the basis of clinical signs and access to toxic plants. Blood tests for liver function and post-mortem examination confirm photosensitisation due to liver disease.

Photosensitisation may be confused with simple sunburn and other causes of dermatitis. It is important that the disease 'bluetongue' (an exotic viral disease of ruminants) is ruled out. Seek veterinary advice.

Treatment

First aid methods are aimed at removing the dietary cause and protecting from sunlight.

- Remove stock from the paddock where the trouble is occurring.
- Ideally, put affected stock in a darkened shed.
- Provide stock with water and cereal hay or lower quality pasture hay with no green colour.
- Seek veterinary attention for severely affected animals and for valuable animals.
- Euthanasia may need to be considered in some instances.

It is important to understand that this condition is not sunburn. The stock are highly allergic to sunlight. They need more than shade. They need complete protection from direct sunlight for at least 7 days. It is wise to move the unaffected portion of the mob/herd to a less green paddock.

Outlook

Badly affected stock may die from shock and infection of the damaged skin. Although up to half the sheep in an affected mob have been known to die, many outbreaks are mild and only a few animals are affected.

- Early recognition and treatment of the condition will minimise losses.
- Milder cases may recover within a few days.
- When there has been severe liver damage, the illness may last for weeks and losses may be more severe.

Prevention

For advice on the safe grazing of plants that cause photosensitisation, refer to the following publications:

- *St John's wort control* (Agfact P7.6.1)
- Primefact 109 *Paterson's curse*

Further information

For further information consult NSW Department of Primary Industries or your local veterinarian.

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