Photosensitization

Photosensitization occurs when non-pigmented or lightly pigmented skin is more susceptible to UV light due to photodynamic molecules within the dermis. Severe skin damage can result and include ulceration, necrosis and edema.

Causes

Type 1 (Primary): Ingestion of preformed photodynamic toxins (i.e.hypericin in St. John's Wort, drugs: phenothiazine, tetracycline)

Type 2 (Aberrant Pigment Metabolism): Congenital defective pigment synthesis causing abnormal accumulations of photodynamic agents in the tissues (uroporphyrin I, coproporphyrin I, protoporphyrin III)

Type 3 (Hepatogenous): Most common form; Impaired capacity of the liver to excrete phylloerythrin, a photodynamic agent and metabolic chlorophyll, secondary to hepatocellular damage or bile duct obstruction

Toxic Plants

Primary photosensitization:

1. Bishop's weed (*Ammi majus*) furocoumarin
2. Rainlily (*Cooperia pedunculata*) fungal elaboration
3. Dutchman's breeches (*Thamnosma texana*) psoralens

Hepatogenous photosensitization :

1. Moldy bermudagrass (*Cynodon dactylon*) fungal elaboration
2. Lantana (*Lantana camara*) lantadene A and B
3. Sacahuista, blooms only (*Nolina texana*) saponins
4. Kleingrass (*Panicum coloratum*) saponins
5. Puncturevine (*Tribulus terrestris*) saponins

Lesions

- Main lesions include and are not limited to skin necrosis and ulceration of the non-pigmented skin, white areas along the back, face, sides of udders, muzzle, underside of tongue, lips, eyelids, and ears. Differences in distribution are related to differences in skin pigmentation of breeds and individual animals
- Affected skin will be red, oozing fluid, and swollen
- In severe cases, large crusts of necrotic, black skin may slough off
- Affected animals may also be icteric with yellow discoloration of the skin and mucus membranes
- Animals will be shade-seeking
- Animals may also experience blindness due to corneal opacity

Diagnosis

- Clinical signs
- Exposure to agents, primary or hepatotoxic, and presence of characteristic lesions
- Bloodwork: increased sorbitol dehydrogenase, gamma glutamyltransferase, alkaline phosphatase enzymatic activity and total bilirubin of 2^0

TVMDL recommends submitting samples for the following tests. In the case of photosensitization, rumen microscopy is of limited use.

- Ruminant Chemistry Profile
- Liver biopsy for Histopathology
- Plant ID

Send samples to the College Station laboratory:
483 Agronomy Road
College Station, Texas 77843-4471

Information on sample shipment can be found at tvmdl.tamu.edu. Contact the laboratory with questions.