

Facial eczema in animals

Bharat A. Pata

Ph. D. Scholar, Department of Livestock Production Management, Kamdhenu University, Junagadh

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Introduction

The saprophyte fungus *Pithomyces chartarum*, which grows on dead plant material at the base of growing pasture, causes facial eczema in grazing ruminants. Sheep, cattle and farmed deer are the species most severely affected by this mycotic disease. In this disease, the skin lesions develop as a result of photosensitization following exposure to the hepatotoxin sporidesmin in the spores of the saprophytic fungus *Pithomyces chartarum*. The fungus sporulates prolifically on pasture litter during warm humid conditions in late summer or early autumn. Hepatobiliary lesions develop as a result of the accumulation and concentration of sporidesmin in the bile. Necrosis of biliary epithelium results in obstruction of intrahepatic ducts with cell debris and diffusion of toxin into the hepatic parenchyma producing damage to blood vessels and hepatocytes. The consequent atrophy, necrosis and fibrosis reduce the capacity of the liver to excrete phylloerythrin, a potent photodynamic compound formed from chlorophyll by enteric organisms, which is distributed to many tissues including the skin. The photodynamic activity of phylloerythrin when exposed to solar radiation produces skin lesions typical of the disease.

Clinical findings

There is a latent period of 10 to 14 days between ingestion of a toxic amount of sporidesmin and the development of photosensitization. In sheep, lesions develop in non - pigmented areas which are not covered by wool. The eyelids, muzzle and ears are inflamed and swollen. Serous exudation and scab formation may be followed by necrosis and sloughing of skin. Jaundice is usually present. In cattle, lesions are limited to areas of non - pigmented skin. Milk production may be severely reduced. Although mortality due to severe liver damage is limited, economic losses arising from debilitation may be considerable.

Diagnosis

- In ruminants, photosensitization accompanied by jaundice is suggestive of the disease.
- Environmental temperatures above 12 °C along with heavy rainfall over a 48 hour period provide suitable conditions for the growth of *P. chartarum* on pasture and are likely to precipitate disease outbreaks.
- Counts of the characteristic spores of *P. chartarum* in pasture samples can be used for prediction of disease outbreaks. Pastures with high spore counts are toxic for grazing animals.
- Elevated serum liver enzymes such as gamma - glutamyl transferase are found in affected animals.
- Competitive ELISA techniques have been developed for field use. Sporidesmin may be detected in bile, urine, plasma or whole blood.

Control and prevention

- Routine monitoring of pasture spore counts can be used to evaluate their safety for grazing.
- Spore formation by *P. chartarum* can be controlled by spraying pastures with benzimidazole fungicides.
- Accumulation of pasture litter can be controlled by pasture management techniques.
- The administration of high doses of zinc to sheep and cattle by drenching with zinc oxide or zinc sulphate in drinking water, before ingestion of sporidesmin, has been shown to reduce sporidesmin induced liver damage.
- For large flocks where daily drenching is impractical, slow - release intraruminal boluses containing zinc, which can produce protection for up to 4 weeks, have been developed and are available commercially.

