

Brief Communication

**POISONING IN SHEEP INDUCED BY THE MUSHROOM
CORTINARIUS SPECIOSISSIMUS**

The mushroom *Cortinarius speciosissimus* may cause severe renal damage in man (*Hulmi et al.* 1974). Experiments have shown that the mushroom may also cause fatal kidney damage in the rat (*Nieminen* 1976). Poisoning in grazing animals has apparently not been reported.

C. speciosissimus was unknown in Norway until 1977 when it was found in the south-eastern part of the country (*Schumacher & Höiland* 1978).

This paper describes loss of sheep on a pasture near Flekkefjord, in the south-western part of Norway, where the mushroom *C. speciosissimus* was found to be present. Severe kidney damage was a striking feature in the 4 sheep examined post mortem. Similar lesions were induced experimentally in a lamb which received suspensions of homogenized mushroom through a stomach tube.

Flock history

The flock comprised 60 ewes and lambs of the Dala breed, grazing a pasture where sheep had been kept for many years. On 13th August, 4 animals were observed to be ill. The sheep, a lamb, a gimmer and 2 ewes, looked depressed and gradually became apathetic. All 4 sheep died or had to be killed on 15th August.

Post-mortem examination

The gross lesions were similar in all 4 cadavers: petechial haemorrhages in the skin and subcutis, petechia subepicardially, subcutaneous and perirenal oedema, and excess of straw-coloured serous or serofibrinous fluid in the abdominal and thoracic cavities. The kidneys in 3 of the 4 sheep were swollen. They were all very pale and had uneven surfaces. The cut surfaces were moist and had pale yellowish radial stripes. Parts of the oesophageal mucosa in all sheep were covered with pseudomembranes and had patchy congestion.

The histopathological examinations will be described in details elsewhere. The main findings were necrosis of the tubular

system, mostly pronounced in the tubuli contorti, dilatation of the tubuli with flattened atrophic or regenerative epithelium, intertubular oedema and also accumulations of polymorphonuclear and mononuclear cells and fibroblasts (tubulointerstitial nephritis).

Examination of the pasture

The pasture is topographically a mosaic of low ridges with bedrock and shallow infertile glacifluviatile material, and many small bogs and swampy regions. An oligotrophic pine forest similar to the association Barbilophozio-Pinetum (*Kielland-Lund* 1967) is dominating the area. The mushroom *C. speciosissimus* was found in 2 young planted stands of norway spruce (*Picea abies*) just where the sheep were observed to be ill.

Feeding experiments

Suspensions of homogenized *C. speciosissimus* were given through stomach tube to 3 ewe lambs with live weights of 40–45 kg. The first 2 lambs received about 10 and 90 g, respectively, of fresh mushroom resulting in a slightly toxic effect on the kidney function. A third lamb was given 1–3 frozen or dried mushrooms daily for 13 days (Day 1 — Day 13). The lamb became ill from Day 10 and died on Day 16. It had proteinuria from Day 9 and haemoglobinuria on Days 10 and 12. Eighteen different blood components were estimated on Days 1, 13 and 15. It was striking that plasma calcium and sodium showed a pronounced drop on the 2 latest days. Post-mortem examination of this experimental lamb revealed gross lesions which resembled those in the 4 sheep. The histopathological examination also showed similar lesions but with a more severe inflammatory reaction of lymphohistiocytic, fibroblastic and plasma cells.

Comments

Mushroom poisoning in animals has attracted little attention according to veterinary literature. Apart from species of the genus *Amanita*, little is known about toxic effects of other mushrooms.

The present examinations strongly indicate that the 4 sheep died of mushroom poisoning after having eaten *C. speciosissimus*. So far it is not possible to judge how readily sheep may be subjected to poisoning. Firstly, it is not known how palatable

sheep find this special mushroom. Secondly, the slight reaction in 2 of the experimental lambs and the fatal course in the third lamb may reflect individual variation in resistance as has been observed in the rat (*Nieminen*). In addition, the distribution of *C. speciosissimus* in Norway is not known.

Other species of the same genus which have been found in this country may be toxic (*Gulden & Schumacher* 1977). Among these, *C. limonium* has been found in this area. Work is in progress to examine whether this mushroom may be harmful for sheep.

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