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A threat to mutton exports

CYSTICERCUS OVIS – SHEEP MEASLES

By G. de CHANEET, Veterinary Parasitologist

CYSTICERCUS OVIS, commonly known as sheep "measles", has come into prominence in the last few years because of the rejection of affected carcasses by overseas markets. Recently it was one of the causes of a complete ban on imports of Australian mutton by the United States and Canada.

Clearly this condition is of great importance to the lamb and mutton industries of Western Australia and every effort must be made to eliminate it.

What causes Cysticercus ovis, and how does it affect the carcass?

What is cysticercus ovis

*Cysticercus ovis* is the intermediate stage in the life cycle of one of the tapeworms found in dogs, *Taenia ovis*. It is a small cyst or bladder (called a cysticercus) that can form anywhere in the muscles of sheep. It is, however, most commonly seen in the heart and diaphragm, because these organs are easy to examine on a carcass.

The mature, live cyst is usually about one-third of an inch long and is creamy white in colour. If cut open it is found to be made up of a tough capsule on the outside, inside which is a thin tissue-like membrane forming a bag. Inside this bag is a very small amount of fluid and attached to this is a round, cream-coloured knob about one thirty-second of an inch in diameter. This knob is the scolex or head that is the beginning of the adult tapeworm.

The cyst usually dies after some months and becomes a hard, fibrous lump. Cysts that have been dead for some time often calcify, and are hard and gritty.

How does it get there?

Each cysticercus is the result of the sheep eating one egg produced by an adult tapeworm.

The adult tapeworms in the intestines of dogs shed their end segments, which contain eggs. These eggs pass out with the dogs' faeces, and so are spread onto areas where sheep are eating.

After being eaten, the egg hatches in the intestine of the sheep, releasing a small embryo, which burrows into the lining of the intestine and gets into a small blood vessel. It is then carried to any part of the body in the bloodstream, finally settling in a muscle where it starts to grow into a cyst.

The cysts reach maturity after three or four months, then usually die. These cysts are often called measles, and an affected sheep is said to be measley.

The adult tapeworm

The adult tapeworm lives in dogs, and possibly foxes and dingoes.

The dog acquires a tapeworm by eating live cysts in infected lamb or mutton. The
LIFE CYCLE OF *Taenia ovis*

**Dog** (or possibly fox or dingo) carrying adult tapeworm in intestine

Tapeworm sheds segments containing eggs which are passed with dog's faeces on to the ground

**Sheep** is the intermediate host and harbours the larval tapeworm - *Cysticercus ovis*

Cysts in meat which become adult tapeworms when eaten by dog

Eggs are eaten by sheep and form cysts in muscle

Dog is definitive host and harbours the adult tapeworm.

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Mature tapeworm from a dog's intestine. Each tapeworm contains 200 to 300 segments.

A ripe segment is shed every one or two days, and as each contains about 20,000 eggs, one tapeworm can contaminate a great deal of ground.

The tapeworm itself is up to 4 ft. long and is divided into 200 to 300 segments. It is flat, and cream coloured. The tape-worm may live for up to nine months in a dog.

**Control**

We do not know a great deal about the ecology of this parasite in Western Australia, partly because of the difficulty of studying its hosts. Investigations are in progress which it is hoped will determine the importance of such things as dog and
fox populations, methods of dog feeding and so on, in perpetuating *Cysticercus ovis* in sheep.

Meanwhile some general recommendations can be made for control of *Cysticercus ovis*:

- **Do not feed dogs raw lamb or mutton (either offal or carcass meat).** If it is to be fed, it must be boiled long enough to ensure that it is well cooked; this may take 40 minutes for large pieces of meat. Many cheap complete prepared dog foods are available, and the cost of such foods for working dogs is a tax deduction.

- **Treat dogs regularly for tape-worms.** The treatment may not be 100 per cent. effective, but is an adjunct to control. Bunamidine ("Scolaban," Burroughs Wellcome) is the drug to use.

- Do not let dogs spend any more time than necessary in sheep yards or paddocks and do not put kennels near the yards. This will reduce the chances of sheep becoming infected.