A call for consistency in the criteria used to reject sheep carcases affected with Cysticercus Ovis

Cysticercus Ovis is the larval stage of Taenia Ovis, a tapeworm mainly affecting dogs and other canids (foxes, wolves) although there have been also documented infections in cats. The adult tapeworm lives in the intestines of these carnivores, shedding mature segments filled with thousands of eggs through their hosts alimentary tract. These segments are passed with the hosts faeces and contaminate pastures. Eggs of this cestode can survive in the environment for three to twelve months depending on the conditions. Sheep become infected by grazing on the contaminated pastures. Once the eggs are ingested by a sheep, they hatch in the intestine and larvae penetrate the intestinal wall, then they are carried by the bloodstream to the target tissues and develop into small oval cysts. As usual, the most active muscles are the predilection sites for the larvae i.e. masseter muscles, diaphragm, heart, skeletal muscles, where the cysts develop. The life cycle of this parasite completes when carnivores eat sheep carcase or offal affected with the viable cysts. This parasite is not zoonotic therefore it is not transmissible to humans at any stages of its cycle.

Cysticercus Ovis is a worldwide issue affecting livestock in many countries and on many continents. The fitness of the meat affected with its lesions has been subject to many discussions and opinions.

The European Legislation is not very specific in relation to infection with Cysticercus Ovis, **(H3) EC 854/2004**, **Annex I**, **Section IV, Chapter IX**, **part B** –'' **Cysticercosis**'', **paragraph 1** refers to infection of *Taenia saginata* in bovine animals. **Paragraph 2** of **part B** of the above legislation states:

''2. Meat infected with Cysticercus is to be declared unfit for human consumption. However, when the animal is not generally infected with Cysticercus, the parts not infected may be declared fit for human consumption after having undergone a cold treatment.''

The Food and Agriculture Organization (FAO) meat inspection manual for developing countries suggests the following guidelines for carcass condemnation:

"In heavy infestations the carcass is condemned. It is commonly considered that an animal is heavily infested if lesions are discovered in two of the usual inspection sites including the masseter muscle, tongue, oesophagus, heart, diaphragm or exposed musculature and in two sites during incision into the shoulder and the rounds. Carcasses with C. Ovis infestations may not be acceptable for export."

There are countries, e.g. The United States of America and Australia, which developed specific guidelines for the rejection of sheep carcases affected with lesions of this parasite to ensure consistency within the inspection team across each country.

The UNITED STATES DEPARTMENT OF AGRICULTURE FOOD SAFETY AND INSPECTION SERVICE,

FSIS DIRECTIVE 6100.2 9/17/2007, Chapter III, III:

''G. When Cysticercus Ovis Affects Sheep Carcasses, PHVs Are To Perform the Following Procedures

1. When inspection program personnel detect Cysticercosis in sheep carcasses during routine post-mortem inspection procedures, PHVs are to:

a. re-examine the heart and esophagus by sight and palpation;

b. palpate the muscles of the diaphragm; and

c. examine carefully the cut surface of muscles exposed during regular dressing procedures (ventral muscles of the neck and brisket and medial muscles of the leg).

2. If PHVs find:

a. only the initial lesions, as described in Chapter III, III. G. 1., they are to make the disposition based on these findings;

b. additional lesions, they are to:

i. make incisions parallel to the cuts as described in Chapter III, III. G. 1.c.; and

ii. remove the peritoneum from the abdominal muscles in the flank and paralumbar regions. PHVs are to examine visually and then make several incisions to aid in the examination;

c. no additional lesions, they are to make the disposition based on the findings as described in Chapter III, III. G. 2.b.; or

d. additional lesions, they are to make deep bold incisions into the heavily-muscled primal parts to determine if various parts of the musculature expose one or more cysts on most of the cut surfaces.

H. Disposition of Sheep Carcasses Affected with Cysticercus Ovis

PHVs are to:

1. condemn the carcass if complete removal of the infection is impractical because of the extent of the infection;

2. pass the carcass for heating to an internal temperature of 140^{0} F after trimming and condemning affected tissue where:

a. there are more than five cysts in the tissues, excluding the heart; and

b. removing the parasites from the affected tissue is practical; and

3. pass the carcass for human food after trimming and condemning affected tissues when PHVs find five or fewer cysts in the tissues, excluding the heart (9 CFR 311.25)''

The Australian Government –The Department of Agriculture, Fisheries and Forestry, Australian Quarantine and Inspection Service, AQIS MEAT NOTICE NUMBER: 2007 / 16 produced the following- '' Disposition Criteria for Cysticercus Ovis'' for the export establishments slaughtering sheep, lambs and goats to ensure consistency in decision making:

''5. DISPOSITION GUIDELINES

5.1 Cysts found in viscera, tongue and carcases are used to identify C. Ovis carcases. Affected carcases are appropriately identified and directed for further inspection by AQIS staff to a retain rail.

5.2 Cysts found in the viscera and tongue are not to be included in the count when making a carcase disposition.

5.3 Carcases found to have no cysts in the musculature on further inspection (that is, carcases with cysts in viscera and tongue only) may be exported with no restriction.

5.4 Where carcases are found to have 1 – 5 cysts in the musculature on further inspection, the cysts and any surrounding tissue from the carcase must be removed and condemned, with the remainder of the carcase passed for human consumption. Such carcases may be exported in boneless form only.

5.5 Viscera including tongue found to contain cysts must either be condemned or saved for pet food production (see 5.7).

5.6 Carcases found to have > 5 cysts in the musculature on further inspection (any cysts found in the viscera and tongue are not counted) must either be condemned or saved for pet food production (see 5.7).

5.7 Carcase and carcase parts at 5.5 and 5.6 may be saved for pet food production if the establishment's AA has a documented procedure for the collection of Animal Food Material (AFM). Such materials must be packed in red banded containers, frozen and consigned subsequently only to premises approved for heat sterilization processing (pet food production).''

It has been noticed that there is a vast discrepancy in the criteria used for the rejection of sheep carcases due to the Cysticercus Ovis in the United Kingdom. The criteria used are very much plant specific and they are different even between establishments within the same cluster. This discrepancy and the lack of clear guidelines within this area not only opens the door to criticism from the meat industry, but also unnecessarily penalises farmers who take their livestock to plants with a more ''strict'' criteria. The prevalence of Cysticercus Ovis found in the sheep carcases has been on the increase in recent years and costs the industry up to seven million pounds annually from the total carcase condemnation in abattoirs (English Beef and Lamb Executive [EBLEX] 2011). Therefore clear guidelines are needed within this area to ensure that the meat is not unnecessarily rejected and that there is a consistent approach towards this issue across the whole of the UK.

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References

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