

TRICHINOSIS IN WILD MEAT

SHEENA A.F.

Department of Animal Science and Environmental Sciences, Lakeland College, Vermilion, Alberta, CANADA

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SUMMARY

A study was conducted on 21 carcasses of wild animals (three grizzly bears, eight black bears, and ten cougars). The animals were obtained during the period of August 1992 to April 1993 from different regions of the province of Alberta, Canada. All of the carcasses were examined for Trichinosis, and in most cases, there were four major sites for sampling: tongue, masseter muscle, diaphragm, and intercostal muscles. One gram of frozen meat was taken from each site, so that very thin slices could easily be cut and placed between a special device to act as a compressor (two poxyglass each 11.0 cm by 9.0 cm by 1.0 cm) and to flatten the sample. Therefore, the sample could be examined under a stereomicroscope with 40X magnification. During this study, all the negative samples which did not show any larvae were to be recorded as negative (< 1 larva per gram) and another one-gram sample were obtained in similar fashion from the respective site for confirmation.

The results showed that only three animals were infected with *Trichinella spp.*: one grizzly bear, one black bear and one cougar. The intensity of infection was in the range of four to six larvae per gram of meat taken from the tongue, masseter, and diaphragm only.

In addition, a mass of approximately 5 cm³ of meat was obtained from the infective sites and stored at -15°C for up to two months. The freezing effect was drastic, which caused disruption to the cysts and disappearance of the larvae.

This study did confirm that wild carnivores, such as bears and cougars, could be a source of human infection with trichinosis, especially for hunters and trappers and others that consume wild meat without proper cooking. Preservation by freezing, following the appropriate guidelines, could be another way to prevent human infection.

Introduction:

Trichinosis is an infection caused by the parasite *Trichinella spiralis* (Libby, 1975; Miyazaki, 1991). The larva of this nematode is considered as one of the main foodborne zoonotic parasites in North America. Although the pork industry in Canada is almost free from trichinosis, most of the incidence and outbreaks occur due to consumption of raw or undercooked wild meat of bear and some carnivores like cougar (Miyazaki, 1991; Butler and Khan, 1992). Wild boar can be another source for trichinosis and it has been reported in U.S.A. (Worley and Seesee, 1991).

Materials and Methods:

1. Samples of wild meat were collected during August 1992 to April 1993 from different locations in the province of Alberta (Figure 1).
2. These samples were representing 21 wild animal carcasses; three grizzly bears, eight black bears, and ten cougars.
3. In some cases, four main sites of muscular systems were considered for sampling from each animal: tongue, masseter muscle, diaphragm, and intercostal muscles.
4. One gram of each site was taken and examined separately. The meat should be freezed so that one can easily cut it into very thin slices and up to one gram. Having these pieces of meat will help to examine the specimen under the stereomicroscope.
5. Then, the gram of meat was placed between a special device (Figure 2) to act as compressor; two poxyglass each 11.0 cm by 9.0 cm by 1.0 cm. These two plates act to flatten the sample (Wilson, 1985).

6. Using 40X stereomicroscope to check for possible presence of *T. spiralis* larva between the muscle fibres.
7. If no larva was detected, another one gram of meat from the same muscle was sampled and re-examined.
8. The same test was repeated on all positive samples. This was done by taking approximately 5 cm³ of meat from the infective sites, and stored at -15°C for up to two months, then check for the larvae survival.

Results and Discussion:

1. Only three animals were infected with *T. spiralis*, a grizzly bear, a black bear, and a cougar.
2. The summary of results is shown in Table 1. In this experiment, samples from tongue and masseter muscle were examined for all the animals. In this connection, there were only two positive animals that have encysted larvae in their muscles. On the other hand, diaphragm samples were obtained from seven animals, and only two were positive; however, the intercostal muscles were sampled from five animals and all were negative.
3. The positive results were measured as larvae per gram of meat; therefore, the negative results were considered as < 1 larva per gram.
4. All the positive meat samples that were stored at a specified conditions showed cyst damages and no larvae survival.
5. This technique is very simple if it was compared with the method of ground tissue digestion in a 1 percent pepsin-HCl solution. Moreover, only one gram of meat was used instead of 50 grams or so for the digestion method.

Conclusion:

1. Wild carnivores and omnivores are a possible source for trichinosis in human, especially if the meat of these animals was consumed without proper cooking.
2. Although, this study was carried out on 21 animals only, and despite the sample size of meat was one gram, the positive results indicated a high incidence of infection among these wild mammals.
3. Therefore, meat should be always cooked very well before consumption.
4. Freezing method is again confirmed by the fact that is one of the methods for possible trichinosis prevention.

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