Acta vet. scand. 1983, 24, 244—246.

Brief Communication

FREEZE-RESISTANCE OF TRICHINELLA CYSTS IN POLAR BEARS FROM THE HIGH-ARCTIC REGION OF NORWAY (SVALBARD)

Cysts of Trichinella spiralis in pork meat are killed by storage at a temperature of —15°C for 20 days (*Jepsen* 1957). This fact is considered to form a sound basis for the prevention of trichinosis in consumers of pork meat. Freezing of dog carcasses has also been recommended to prevent the spread of trichinosis in Greenland (*Jepsen*). The deep-freezing of polar bear meat is assumed to prevent trichinosis among sledgedogs fed on such meat on Svalbard (*Thorshaug & Rosted* 1956). For the protection of man either prolonged freezing or cooking of the meat is recommended (*Madsen* 1961).

During recent years, renewed attention has been given to the biological features of strains of T. spiralis from different geographical areas. Canadian, English and Russian scientists are of the opinion that polar animals may be infected with a distinct variety of the species T. spiralis, designated T. spiralis nativa (*Nelson et al.* 1966, *Britov & Boev* 1972, *Beloservic & Dick* 1980). This variety is considered to have some biological characteristics which differ from T. spiralis isolated from e.g. pork, as the infectivity of the former parasite in some laboratory animals differs from the latter.

The aim of the present study was to examine the freeze-resistance of Trichinella cysts in meat from the polar bear (Ursus maritimus), an animal which has a circumpolar range. The polar bear is a protected species in Norway, but animals are occasionally shot on Svalbard in self-defence (*Larsen & Kjos-Hanssen*, in press). The present material comprised the heads of 5 polar bears shot on Svalbard during the period 1979 to 1982. The heads were stored at —18°C for 5 to 38 months (Table 1). After thawing, samples (10—100 g) were collected from the maseter muscle. The samples were digested and examined for Trichinella in a trichinoscope (*Framstad* 1980). The total number of larvae in

each sample was counted, and results expressed as living Trichinella per 10 g of meat. The term "living" was applied to larvae which showed quick active motion. Living larvae (Svalbard isolate) were observed in samples from 4 of the 5 bears.

Table 1. Trichinella cysts in meat from polar bear stored at —18°C.

Bear no.	Storage, months	Living larvae per 10 g
1	38	3
2	33	60
3	24	100
4	5	100
5	5	0

Samples of muscle from 2 of the bears were fed to white mice (BOM NMRI). Each dose contained a total of 40 living larvae. After 5 weeks, the mice were killed and the whole body examined for the presence of Trichinella as described above. Larvae from the 2 bears proved to be infective as a new generation of larvae was produced in the mice (Table 2).

Table 2. Infectivity of Trichinella larvae from polar bear in white mice. The infected meat had been kept at —18°C for 5—24 months before given to the mice.

Bear no.	Infection dose (no. of larvae)	Total number of larvae found*	Number of larvae found/g of the host
3	40	6600	460
4	40	7000	480

* In the whole body of the mice.

It is thus obvious that Trichinella in samples from 4 of the 5 polar bears survived storage at —18°C for periods varying from 5 to 39 months. Results also clearly demonstrated that larvae from at least 2 of the bears were infective to white mice.

The morphology of the Trichinella investigated in this study did not seem to differ from that of the well-known T. spiralis found in synantropic animals. Neither did infectivity in white mice differ from the previously establshed picture. The dif-

ference in freeze resistance should however be strongly emphasized.

Further biological studies are necessary in order to determine whether or not the features of this Svalbard Trichinella isolate from polar bears are similar to those of northern strains isolated from other parts of the Arctic.

Bjørn Kjos-Hanssen
The Department of Food Hygiene, Norwegian College of Veterinary Medicine, Oslo, Norway.

REFERENCES

Belosevic, M. & I. A. Dick: Trichinella spiralis: Comparison with an arctic isolate. Exp. Parasit. 1980, *49*, 266—276.

Britov, V. A. & S. N. Boev: Taxonomic status of different strains of Trichinella and the nature of their focal occurrence. Vestn. Akad. Nauk. Kaz. SSR, 1972, *28*, 27—32.

Framstad, K.: Magnetrører — trikinkontrollmetoden. (Magnetstirrer-digestion method in *Trichinella* meat inspection). Norsk Vet.-T. 1980, *92*, 507—512.

Jepsen, Aa.: Kødkontrol (Meat Inspection). Den kgl. Veterinær- og Landbohøjskole, Copenhagen, Denmark, 1957.

Larsen, Thor & B. Kjos-Hanssen: Trichinella in polar bears from Svalbard, related to age and hide length. Polar Res. 1983, 2, in press.

Madsen, H.: The distribution of Trichinella spiralis in sledge dogs and wild mammals in Greenland under a global aspect. Medd. Grøn., 1961, *159*, 1—124.

Nelson, G. S., E. J. Blackie & J. Mukundi: Comparative studies on geographical strains of Trichinella spiralis. Trans. R. Soc. trop. Med. Hyg. 1966, *60*, 471—480.

Thorshaug, K. & A. F. Rosted: Researches into the prevalence of Trichinosis in animals in Arctic and Antarctic waters. Nord. Vet.-Med. 1956, *8*, 115—129.

(Received May 6, 1983).

Reprints may be requested from: Bjørn Kjos-Hanssen, Tordenskjoldsgt. 4, 4 000 Stavanger, Norway.