Effect of temperature on the survival of *Alaria alata* mesocercariae

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Introduction and aim

The presence of *A. alata* mesocercariae or *Distomum musculorum* suis (DMS) poses a potential risk for humans when uncooked game meat is consumed. Insufficiently cooked, frozen or refrigerated game meat can act as a source of infection of alariosis. Cooking and freezing are considered to be effective in killing the parasites.

Material and Methods

- DMS were collected from 39 naturally infected wild animals originating from different regions in eastern Germany (February 2012 to December 2013).

- All carcases were analyzed with the *A. alata* mesocercariae migration technique (AMT) (2) All DMS were examined under a stereomicroscope at room temperature for visual evaluation of larval vitality within 1 min.

- Viability was recorded on the basis of larval motility (active vs. non-active). Larvae that did not show any signs of motility or movement within 1 min were considered as dead.

- (1) Isolation of the parasite with AMT technique

- (2) Identification of the parasite

- (3) Temperature experiments

Refrigeration of game meat is considered as an important part of the safety of game meat chain production whereas microwave treatment has not been studied on the inactivation of DMS in game meat. The aim is to determine the parasites survival time and/or temperature if exposed to heating, refrigeration, freezing and microwave treatment.

Survival

**Heating**

- *Inactivation at 60.0°C*

**Refrigeration**

- *Inactivation at day 13*

**OBSERVATION:**

- Meat which may contain *Trichinella* spp. larvae should be cooked until a core temperature of 71.0°C Gamble et al. (2000)

Microwave treatment

- *Inactivation at 90 s*

**OBSERVATION:**

- Meat samples partly remained raw in the core, although the meat`s surface was partially denatured

Freezing

- *Inactivation after 1.5 h*

**OBSERVATION:**

- DMS in pork meat survived up to 8 weeks at -20.0°C Hiepe (1985)

Conclusion

The presence of DMS in food producing animals and the consumption of insufficiently heated edible tissues of the animals can cause alariosis in humans.

Proper cooking (minimum of 60.0°C at core temperature at least for 3min) and freezing (-18.0±2°C minimum of 2.0h) treatment of game meat can sustainably reduce the survival of the parasite and therefore the risk for human infection.

Refrigeration and short time exposure to microwave radiation cannot be recommended as reliable treatment methods for the inactivation of DMS in game meat.

References


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