

Forests, game and parasites

Game meat is becoming more and more popular. Few people know that it could also contain parasites. The BfR is investigating the spread of pathogens in roe deer, red deer and wild boar.

Game studies are a core research area at the BfR Study Centre "Land Use-Related Assessment Methods and One Health Concepts (LaBeOH)". Topics include research on forest, game and bees. Research is primarily being carried out in federal forest areas. The BfR frequently uses samples of game meat taken during the respective hunting seasons; it also investigates other contaminants and plant protection products in addition to studies on the occurrence of parasites.

It is six in the morning at a hunting ground in Brandenburg; it is dark and cold. Wrapped up warm, BfR scientist Kaya Stollberg listens to the hunt leader's instructions. She is surrounded by 15 hunters who are about to go to work. They hunt to maintain the grounds. Stollberg, in a safety vest so she can be spotted easily, walks through the bushes with the others, noisily, in order to startle wild boar, roe and red deer. It is clearly defined when the first and last shot can be fired. The trained vet has brought along transport boxes and test tubes, which she will later fill with samples of the hunted game. In the afternoon, when the mort sounds from the hunters' horns, signal for the end of the hunt, she and her colleagues drive to the BfR laboratory and prepare the collected samples for testing. The lab team is looking for parasites.

The BfR is investigating parasites' prevalence

Roe deer, wild boar and red deer can carry parasites, such as *Toxoplasma*, *Alaria alata*, *Trichinella* or *Sarcocystis*. The problem is that although game meat is not frequently consumed, it is still a popular delicacy, especially over the Christmas period. If however the meat contains parasites that have not been killed during cooking, they can be transmitted to humans and make them ill.

The BfR is working on a research project to increase our understanding about the occurrence of parasites in game meat and their respective health risks to humans. "Up to now, the search for parasites in game has not been very systematic. We are now looking in more detail," says Dr. Martin Richter. The pharmacist heads the "Diagnostics, Pathogen Characterisation, Parasites in Food" unit at the BfR. The planned game studies allow for a long term assessment of parasite prevalence. "Since we always sample the same areas, we can determine whether the animals have been infected with potentially disease-causing pathogens to a greater or lesser extent over the years." A comparison with climate data also makes it possible to assess the extent to which a rainy year or a dry summer influences animals contracting a parasite. The more data collected and evaluated over the years, the easier it is to assess the potential health risks associated with consuming game meat or food made from it.

Toxoplasma and *Alaria alata* in game

Preliminary results from Martin Richter's laboratory show that around 25 percent of wild boar, 16 percent of roe deer and 4 percent of red deer carry antibodies against *Toxoplasma gondii*, the pathogen that causes toxoplasmosis. Another parasite found in wild boar



How can I protect myself?

The following applies to all game meat connoisseurs who want to apply precautionary measures to protect themselves from parasitic diseases. These measures are particularly relevant for consumers with a weakened immune system: game meat, raw sausages and products made from game, such as smoked ham, should only be consumed if thoroughly cooked – minimum requirement: cooked for at least two minutes at 72° Celsius core temperature.

tested in the BfR laboratory is *Alaria alata* – or more precisely a certain development stage of this trematode which occasionally occurs as an incidental finding when investigating meat for *Trichinella* infestation, which is mandatory also in wild boar. Whether this parasite can make people sick has not yet been clarified. However, the related species *Alaria americana*, has been reported to have caused severe disease in isolated cases but this particular species has not yet been detected in Europe. As a precaution, Switzerland has classified *Alaria alata* already as a zoonotic pathogen. Richter's laboratory team is developing new methods to extend the spectrum of methods on how these pathogens can be detected reliably. Further, the aim is to contribute to identifying more effectively which health risks these parasites pose to humans in particular.

It is now Kaya Stollberg's second hunting season collecting samples in the team. In addition to monitoring parasites, the BfR uses these samples for numerous other research projects (see box). Since parasite occurrence often varies from region to region, more areas in Germany will be included in these studies in the future. ■

More information:
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