

A Study of the Prevalence of Trichinellosis in Domestic and Wild Animals for the Region of Sofia, Bulgaria

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Abstract : Nematodes of the genus *Trichinella* are zoonotic parasites with a cosmopolitan distribution. More than 100 species of mammals, birds and reptiles are involved in the natural cycle of this nematode. At present, *T. spiralis*, *T. pseudospiralis*, and *T. britovi* have been found in Bulgaria. The existence of natural wildlife and domestic reservoirs of *Trichinella* spp. can be a serious threat to human health. Three trichinella isolates caused human trichinella infection outbreaks from three regions of Sofia City Province were used for the research: sample No. 1 - *Rattus norvegicus*, sample No. 2 - domestic pig (*Sus scrofa domestica*), sample No. 3 - domestic pig (*Sus scrofa domestica*). *Trichinella* larvae of the studied species were isolated via digestive method (pepsin, hydrochloric acid, water) at 37°C by standard procedure and were determined by gender (male and female) based on their morphological characteristics. As a reference trichinella species were used: *T. spiralis*, *T. pseudospiralis*, *T. nativa* and *T. britovi*. Single male and female larvae of the three isolates were crossed with single male and female larvae of the reference trichinella species as well as reciprocally. As a result of cross-breeding, offspring of muscular larvae with *T. spiralis* and *T. britovi* were obtained, while in experiments with *T. pseudospiralis* and *T. nativa*, trichinella larvae were not found in the laboratory mice. The results obtained in the control groups indicate that the trichinella larvae used from the isolates and the four trichinella species are infective. Also, the infective ability of the F1 offspring from the successful cross-breeding between isolates and reference species was investigated. Through the data obtained in the experiment was found that isolates No. 1 and No. 2 belong to the species *T. spiralis*, and isolate No. 3 belongs to the species *T. britovi*. The results were confirmed by PCR and real-time PCR analysis. Thus the presence and circulation of the species *T. spiralis* and *T. britovi* in Bulgaria was confirmed. Probably the rodents (rats) are involved in the distribution of *T. spiralis* in urban environment. The species *T. britovi* found in a domestic pig speaks of some contact with wild animals for which *T. britovi* is characteristic. The probable reason is that a large number of farmers in Bulgaria practice the free-range breeding of domestic pigs. Part of the farmers also used as food for domestic pigs waste products from the game (foxes, jackals, bears, wolves) and probably thus the infection was obtained. The distribution range of trichinella species in Bulgaria is not strictly outlined. It is believed that *T. spiralis* is most common in domestic animals and *T. britovi* and *T. pseudospiralis* are characteristic of wildlife. To answer the question whether wild and synanthropic animals are infected with the same or different trichinella species, which species predominate in nature and what their distribution among different hosts is, further research is required.

Keywords : cross-breeding, Sofia, trichinellosis, *Trichinella britovi*, *Trichinella spiralis*

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