

# CURRENT STATUS OF FOOD-BORNE PARASITIC ZONOSSES IN KOREA

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**Abstract.** In Korea meat from various mammals, reptiles, amphibians, fish, and crustaceans serves as host for approximately 25 species of parasites. These food-borne parasitic zoonoses are important public health problems; they are of concern for the live stock and food industry and for farmers and fisherman. Traditionally, Koreans have been vegetable and fish eating people, but eating habits are changing to include the eating of meat. Dogs, cats and other pets are finding places in the home and these animals become involved in zoonotic diseases. Consequently, the prevalence of zoonotic parasitoses is increasing in Korea. There are increasing reports of cryptosporidiosis and trichinosis in the country associated with changing cultural habits in the Korean people.

## INTRODUCTION

Koreans have been known to be highly endemic for parasitic diseases. Some of the classical parasitoses, such as the soil-transmitted nematodes, were widespread, but are now on the decline due to the implementation of country-wide control measures. Koreans are very fond of vegetables and many often eat them raw or only partly cooked or pickled. The eating of various animal life has also been a custom, but in recent years there has been an increase in eating animal flesh and fish raw or only partially cooked. As a consequence of these newly acquired eating habits, new parasitoses have appeared (Soh, 1981; Chun, 1987; Lee, 1989). The following is a short review of some of the food-borne parasitoses seen in Korea.

### Toxoplasmosis

Infection with *Toxoplasma gondii* has recently emerged as a public health problem in Korea. The earliest infection studies used the *Toxoplasma* skin test and showed differences in prevalence by occupation: butchers 7.8%, students 1.3% (Soh *et al.*, 1960). Further seroepidemiological studies among neurologically and physically impaired patients in Seoul indicated that *Toxoplasma* was involved in mental and physical retardation (Soh *et al.*, 1975). Among 166 mental patients, 16 (9.6%) had positive IFA antibody titers of 1:1600 or greater. Of 64 cerebral palsy patients 4.7% had positive titers, and among 74 cleft-lip patients 28.4% were seropositive. Reactions in the control groups were in the normal range. These findings suggest the pos-

sibility of congenital toxoplasmosis in Korea. Clinicians appear to be overlooking the importance of *T. gondii* in clinical diseases. For example, students at the Institute of Tropical Medicine at Yonsei University diagnosed two cases of chorioretinitis and 4 cases of neonatal jaundice parasitologically for which the clinicians were considering another etiologic agent (Choi *et al.*, 1980; Chung *et al.*, 1980).

### Clonorchiasis

*Clonorchis sinensis* is one of the most important endemic parasites in Korea. It has been known to be endemic for many years. In earlier years, Walton and Chyu (1959) estimated 4.5 million infections among 30 million people after a skin test survey; it was a problem of considerable magnitude. *Parafossarulus manchouricus* is known to be the first-intermediate host and the snail is widely distributed in the plain areas along the rivers of South Korea. A recent study showed 0.09-0.6% of the snails with cercariae of *C. sinensis* in a ravine area (Min, 1975). Twenty-nine species of fish, mostly of the family Cyprinidae, are known to be second-intermediate hosts. One of these is *Pseudorasbora parva*, a popular species usually heavily infected with metacercariae (Soh, 1981). Domestic and wild animals play an important role in the spread of the parasite and disease. Fecal examination of some animals in endemic areas showed that 0.14-10.0% of dogs, 7.3% of cats, and 0.33% of house rats passing *C. sinensis* eggs (Min, 1982). Clinically, clonorchiasis causes gastrointestinal disturbances and altered liver functions, and there is evidence that the disease is

associated with cholangiocarcinoma (Min and Soh, 1980).

#### Paragonimiasis

*Paragonimus westermani* has been recognized as a serious parasitic zoonosis in Korea for many years. In the survey by Walton and Chyu (1959) using antigen from *P. westermani* and a skin test, they reported seropositive rates of 3.0-4.7% in areas endemic for paragonimiasis. The highest rates were on Cheju-Do Province. In recent years, the prevalence has decreased with the use of effective new drugs and health education.

The major first-intermediate host the snail *Semisulcospira libertina*, and the second-intermediate hosts are crabs, *Eriocheir japonicus* and *E. sinensis*, and crayfish *Cambaroides similis*. There are no accurate data on infections in wildlife although the parasite is euryxenous. Min (1982), however, reported infections in 8.0% of the cats and in 0.2-3.0% of the dogs examined. The highest infections among these animals was in Cheju-Do Province. The most common source of infection was eating crabs that had been immersed in soy sauce. Crayfish are usually not eaten raw but their juices are used for the treatment of measles. These habits persist in some areas and remain important means of infection (Soh, 1981).

#### Cestodiasis

*Taenia saginata*, *T. solium* including *Cysticercus cellulosae*, and sparganum are common food-related zoonotic parasites found in Korea (Soh, 1981). Soh (1961) examined 3,615 rural people in a plains area of Korea by questionnaire and 129 (3.6%) reported passing tapeworm segments. No other general surveys have been done but it is assumed that the prevalence rates have not changed. There is a question, however, on speciation of the tapeworm on this island as preliminary studies suggest the parasite to be similar to the *T. saginata*-like worms from Taiwan (Fan and Soh, 1989).

Cho *et al* (1967) examined 105 worms expelled by 98 patients and found them to be as follows: *T. saginata* 86.7%, *T. solium* 4.1%, mixed *T. saginata* and *T. solium* 6.2%, and unidentified tapeworms (poor preservation) 3%. Pork is more commonly eaten than beef but *T. saginata* is more often found than *T. solium*.

#### Other food-borne zoonotic parasites

There are many other zoonotic parasites in Korea but the prevalences are very low. Cryptosporidiosis is rare and *Trichinella spiralis* is of little consequence. Details of these other parasitoses may be found in reviews by Soh, 1981; Min, 1982; and Lee, 1989.

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