

## Studies on the Prevention of Clonorchis sinensis Infection

### I. Observation on the Infection Rate of Clonorchis sinensis and Opithorchis felineus in Korean Dogs

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#### INTRODUCTION

In 1959, Walton and Chyu found the positive of Clonorchis sinensis in 2,066(21.1%) out of 9,711 individuals in Korean by means of intracutaneous reaction using the worm veronal buffered saline antigen (5).

Even though preventive methods of clonorchiasis in human beings, as a zoonoses, are consisted of mainly administration of various anthelmintics and prohibition of uncooked eating of the intermediate hosts etc., eradication of the possessive hosts among the animals except of human beings is also one of important problem in a view of preventive medicine.

In the experiment the infection rate of Clonorchis sinensis and Opithorchis felineus in Korean native dogs, which has never been reported in Korea, was inspected as a basic observations for the prevention of Clonorchis sinensis and Opithorchis felineus infection in human beings.

#### MATERIALS AND METHODS

##### 1. Materials

The fresh internal organs of oesophagus, stomach, intestine, heart, trachea, liver, pancreas, lung and gall bladder from 150 Korean native dogs, undifferentiated

sex and aging from 12 to 36 months, had been collected from Iri abatoir and were examined during December 1962 and March 1963.

##### 2. Methods

The oesophagus, stomach, intestine, heart, trachea and gall bladder were opened and the contents or mucous were collected in petri-dishes. The liver and pancreas dissected and pressed by fingers to discharge the worm containing material from the ducts. The lungs were dissected along the trachea to bronchia and the terminal regions of the organ were separated and then it were also pressed and collected the worm containing material.

The worm containing materials were filtrated by means of sieve of 0.5 square millimeter, the filtrates were washed with water for several times and then the worms were collected and rewashed with physiological saline solution.

The worms in a state of living specimen were observed by using dissecting microscope and then pressured permanent micro-specimen stained with Semicon's aceto-carmine were made for further correct differentiation.

#### EXPERIMENTAL RESULTS

##### 1. Morphological classification

Morphological classification of Clonorchis sinensis and

Table I-Differentiation of Clonorchis sinensis and Opithorchis felineus observed in Korean native dogs.

Species	Length(mm.)		Width(mm.)		Position and Structure of Testes
	Range	Mean	Range	Mean	
Clonorchis sinensis	13-17	15.5	2.1-2.9	2.5	Much branched testes lay antero-posteriorly in the posterior third of the body, and extend to the lateral fields of bilateral intestine.
Opithorchis felineus	8.0-12.2	9.2	1.8-2.4	2.4	4 lobed anterior and 5 lobed posterior testes lay in the posterior fourth of the body and the excretory bladder passes between them.

*Opithorchis felineus* was classified by the position and structure of tests, which have been commonly applied for the differentiation of them, as summarized in table I (1, 2, 3, 4). Range and mean of size of each species as shown in table I were calculated from the measurements of 10 worms in each cases containing more over 10 worms.

## 2. Number of worm and location

The number of worm and location were summarized in table II. One of suspicious species of trematoda apparently different from *Clonorchis sinensis* and *Opithorchis felineus* were found but these were not included in the table.

Table II-Number and distribution of *Clonorchis sinensis* and *Opithorchis felineus* in Korean native dogs

S—*Clonorchis sinensis*  
F—*Opithorchis felineus*

Case number	Species of Parasites	Total number of worms	Number of Worms in Different Organ		
			Gall bladder	Bile duct	Duodenum
17	S	36	—	36	—
39	S	3	—	2	1
43	S	124	—	124	—
44	S	135	—	134	1
45	S	78	—	78	—
53	S	402	98	302	2
58	S	> 1,505	> 500	> 1,000	5
61	S	153	29	127	2
70	S	35	—	31	4
73	S	> 500	—	> 500	—
80	S	79	—	77	2
81	S	> 1,501	> 500	> 1,000	1
93	S	7	—	7	—
137	S	372	—	369	3
142	S	235	127	108	—
59	F	375	—	375	—
103	F	435	—	435	—

## 3. Infection rate

Infection rate was summarized in table III.

Table III-Infection rate of *Clonorchis sinensis* and *Opithorchis felineus* in Korean native dogs

Species of parasites	Number of dog examined	Number of positive dogs	Infection rate (%)
<i>Clonorchis sinensis</i>	150	15	10
<i>Opithorchis felineus</i>	150	2	1.3

## DISCUSSION

The internal organs of 150 Korean native dogs collected from Iri district were examined by means of autopsy. Of 150 dogs, 15(10%) were infected with *Clonorchis sinensis* and in 2(1.3%), were infected with *Opithorchis felineus*.

This observation clearly showed high infection rate suggesting that eradication of the possessive host of dogs

is one of the important problem for the prevention of clonorchiasis in human beings even if this fact is not equally applicable in whole region of Korea as Iri district is neighbourhood to the Mangkiowing river which has been well known as heavily contaminated with this worm.

## CONCLUSIONS

Of 150 dogs inspected, 10 per cent was infected with

Clonorchis sinensis and 1.3 per cent was infected with Opithorchis felineus. All of 15 cases infected with Clonorchis sinensis and 2 cases infected with Opithorchis felineus were invaded into bile duct, however, bile bladder in 5 cases of infected dogs and duodenum in 9 cases were respectively invaded also.

More than 1,000 Clonorchis sinensis in 2 cases, more than 500 in 1 case, more than 100 in 8 cases(involving 2 cases of Opithorchis felineus) and less than 100 in 6 cases were respectively present.

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### 抄 錄

### 肝吸蟲感染豫防에 關한 研究

#### 第 I 報 韓國產畜犬의 肝吸蟲 및 猫吸蟲 感染率調査

全北大學校 農科大學 獸醫學科 李 宰 求

裡里地方의 畜犬內臟 150 頭分을 剖檢한 結果 15 例(10%)에 있어서 肝吸蟲의 感染을 그리고 2例(1.3%)에 있어서 猫吸蟲의 感染을 보았다. 이 事實로 미루어보아 우리나라에 있어서 感染犬으로 부터 間接적으로 사람에게 感染이 成立되는 것이 明確함으로 畜犬의 感染豫防이나 感染犬의 撲滅은 豫防醫學의 見地에서 重大한 意義가 있다.