

## Animal Fasciolosis in North of Iran

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### Abstract

**Background:** Fasciolosis is a well known parasitic disease of animals with public health importance. In Rasht and Bandar-Anzali, in Gilan Province, where experienced two large human fasciolosis outbreaks, no update information is available on animal fasciolosis. Paucity of information on animal fasciolosis in these regions and its possible impacts on human fasciolosis called us for carrying out this study.

**Methods:** During 2005, coprologic surveys using flotation method were applied to fecal samples of 156 stray cattle, 171 calves, 178 sheep, 85 buffaloes, 79 horses and 10 samples from 10 different preserved animal manure collections to detect *Fasciola* egg.

**Results:** Fecal samples of 32 % of sheep, 32.1% of cattle, 0% of calves, 17% of buffaloes, 50% of horses and 100% of animal manure samples harbored *Fasciola* egg. The mean intensity of *Fasciola* egg per gram of feces (EPG) was low (0-13).

**Conclusion:** Fasciolosis was very prevalent among animals in studied regions. Because sheep breeding is not a common practice in Rasht and Bandar -Anzali and horse population is low, cattle and to a lesser extent buffalo were the predominant reservoir hosts of infection. Regular treatment of all animals with an effective flukicide and sanitation of animal manure through its preservation for two month should be applied in order to reduce the level of infection in animals, water, wild and cultivated vegetables and consequently human beings.

**Keywords:** *Fasciolosis, Prevalence, Animals, Manure, Iran*

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### Introduction

Fasciolosis is a well known parasitic disease, because of its veterinary importance. It is now also an important human parasitic disease with estimated ranging from 2.4 to 17 million people infected (1). Recently worldwide losses in animal productivity due to fasciolosis were conservatively estimated at over US\$ 3.2 billion per annum (2). *Fasciola hepatica* and *F. gigantica* the causative agents of fasciolosis of animals and man are reported from different regions in Iran (3-6), although the distribution of both species overlaps in many parts of the country (4, 7, 8). In Asia the most human cases were reported from Iran, mainly from Gilan Province (5), where one report exists only on animal fasciolosis (9).

Paucity of information on animal fasciolosis in Rasht and Bandar-Anzali and its possible impacts on human fasciolosis calls us for carrying out this study.

### Materials and Methods

Rasht the provincial capital located at the central plain of Gilan Province eight meters above the sea level and Bandar-Anzali 40 km far from Rasht both enjoy moderate weather with considerable rainfall (1500mm and 1951mm respectively). During 2005, coproscopic analyses on 156 cattle, 171 calves (3-4 mo), 178 sheep, 85 buffaloes, 79 horses, and 10 manure samples taken from 10 different freshly preserved animal manure collections were carried out for detection of *Fasciola* egg. Flotation method using a mixture of saturated zinc and sodium chloride solution (SG. 1.52) and a clayton-lane centrifuge were used for determination the number of egg per gram of feces (EPG).

### Results

The results from coproscopic analyses are shown in Table 1.

Evidence from Table 1 indicates that due to uncommon practice of sheep breeding and low population of horse in studied areas, the predominant animal reservoirs are cattle and to a lesser extent buffalo. On the other hand high infection of animals and animal manure with *Fasciola* eggs and preservation of the latter for fertilizing farm land could play a critical role in environmental contamination and spreading fasciolosis in animals and human beings.

**Table 1:** Prevalence of *Fasciola* in animals and manure in Rash and Bandar-Anzali

Source	No. examined	EPG		
		% Infection	Mean	Range
Sheep	178	32	6.3	1-71
Cattle	156	32.1	8.5	1-4
calf	171	0	0	0
Buffalo	85	17	13	1-92
Horse	79	50	8	1-37
Manure	10	100	12	1-32

## Discussion

Our findings showed that fasciolosis is very prevalent among animals in Rasht and Bandar-Anzali. Considering the prepatent period of fasciolosis (12 wk), the absence of *Fasciola* egg in calf is a natural phenomena. But the percentage of infection in other animals and animal manure was higher than 21, 5% previously reported from ruminants of Gilan (9). Because sheep breeding is not a common practice in Rasht and Bandar-Anzali and horse population is low, the predominant animal reservoirs were stray cattle regarding its population (675000) and high prevalence of infection (32.1%) and to a lesser extent buffalo. In Mazandaran Province, neighboring Gilan with rather similar climatic conditions and animal husbandry management, 7.3% of sheep and 25.4% of cattle were found to be infected with *Fasciola* egg (10), a finding partly in harmony with our results. Accordingly our results are in consonant with prevalence rate of liver fluke in Khuzestan ruminants except that of buffalo (82%) (7). Fasciolosis may causes serious economic problem.

Recently worldwide losses in animal productivity due to fasciolosis were conservatively estimated at over US\$ 3.2 billion per annum (2). However it is asymptomatic in most cases, but has substantial effects on milk production and a reduction in food conversion efficiency with reduced weight gain (11). Therefore preventive regular treatments of all animals with an effective flukicide will reduce the prevalence of adult fluke and consequently environmental contamination with *Fasciola* eggs. According to Mas-Coma et al. (1) metacercarial infectivity is independent from the animal reservoir sources, demonstrating that fluke from secondary reservoir hosts such as pig and equines involved the same potential risk as those from main reservoirs as sheep and cattle. Therefore in addition to horse, infection of wild boars of Gilan with *F. gigantica* (12) can play a local and minor role in spreading fasciolosis in animals and man. Fasciolosis is a major plant born disease. In Iranian province of Gilan including Rasht and Bandar-Anzali several very popular kinds of wild plants such as of *Mentha pulegium* and *Mentha piperita* are eaten raw, in some popular local dishes, such as olive past (local name *Zeitoon parvardeh*). Human infection in Rasht and Bandar-Anzali (8), Kermanshah (13) and Egypt (14) was related to consumption of local green aquatic vegetables. In developed countries animal manure is considered as a waste, but in many developing countries including Iran, animal manure is a valuable medium for fertilizing farm lands. Therefore for its sanitation different methods such as: storage of manure for two months, anaerobic digestion, aerobic digestion, high temperature drying, electrochemical method, sound waves and ultraviolet or radioactive waves are suggested (15). Thermal processing (pasteurization) at 70 °C for 30-60 min is used in some European countries such as Germany and Switzerland for liquid manures used as fertilization grassland during summer months (15). Among other things, it seems likely that under actual condition in Iran, the storage of animal manure for two month secures the inactivation of all parasites. Therefore in contrast to Mas-Coma et al. (16) who believe high prevalence of *Fasciola*

in humans does not seem to be related to high prevalence in livestock, the results of the present study show that such a relation could be responsible for the high prevalence of human fasciolosis in Rasht and Bandar-Anzali, where experienced two major human outbreaks during 1989 and 1999. Therefore controlling fasciolosis in animals and human beings and maintenance of food safety consumed by man, measures recommended are the same as applied for veterinary fasciolosis (17) and communities in epidemic areas should be appropriately informed about the disease, its transmission and sanitation of farm animal manure.

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