

Soil Survey of parasitic infection in public parks in south of Fars province

Mohammad Zareie¹, Ahad Oleyaei², Ali Karimi²

¹ Doctor of Veterinary Medicine, Islamic Azad University, Kazeroon Branch, Fars province, Iran

² Assistant Professor and Faculty Member of Veterinary Medicine, Kazeroon Branch, Fars province, Iran
dvm.zareie68@gmail.com

Abstract: Parks are public places where large numbers of people to spend a day in each city for leisure, play, recreation and eating. Many parasitic contaminations spend at least one of their life cycles in the soil to feed and that's why soils especially in busy and crowded areas, if they are infected, they contribute to the transmission of parasitic infections in humans. In this study, the approximately 15 parks were selected and studied proposed named Organization of green space and parks of the province's five southernmost city Fasa, Jahrom, khonj, Estahban and Darab which is relatively large and publicly acceptable. A total of 150 soil samples from different areas of the park including children's play area, the bathrooms, where people sit around the buffet parks and green space sampling were performed. From February 2012 to July 2013 monthly samples were taken, approximately 5 monthly samples would be taken from the city, but also a mixture of soil samples taken from several locations that were intervals. After transferring the samples to the laboratory using sieve 400 and matter of saturated sediment and floating method possible parasitic infection was investigated. Of 150 soil samples, 95 samples (63.4%) with infection and 55 cases (36.6%), no contamination was detected. The city of Darab study with 24 patients (80%) and highest khonj with 13 (43.33%) had the lowest contamination. Also, Fasa, Jahrom and Estahban were contaminated (60%), (56.67%) and (76.67%), respectively. 95 cases of infection were diagnosed in 33 cases (34.7%), 23 (24.2%), 11 cases (11.57%) and 17 cases (17.96%) in order to investigate the children's play area around the restroom, seating people, parks and green space has been around the buffet.

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Key words: parasitic infection; public parks; Fars province

1. Introduction:

Among the 15 proposed parks, green space and parks named in the Fars province, in a large park in 2012-2013 in south of the Province (Fasa, Jahrom, Darab, khonj and Estahban) were selected and studied. A total of 150 soil samples were analyzed.

Monthly, two samples were taken from each park; In each sample 100 g of soil to a depth of about 3 cm was removed. Samples from all parts of the park (playground for children, the local health service, where people sit around the buffet and green) were performed. Note To obtain more complete soil sample, for example the children's playground in the park and select multiple points and then finally the mixed soil were collected from each soil sample was separated.

Samples to reach the laboratory were stored in plastic bags. In the laboratory the samples were air dried. 2 g of each sample with 50 ml of distilled water and the mixture was left for 20 hours to itself. The samples were passed through a sieve of 400 supernatants were centrifuged for 5 minutes at 1500 rpm. The supernatant was discarded and the sediment mixture of 1 ml of saturated sodium chloride and added to the 1500 rpm for 5 min and then was centrifuged. In another test tube and poured the entire tube is filled with a mixture of saturated

sodium chloride and zinc to form a crescent on its surface. The coverslip was placed on it for 20 minutes.

During the mentioned period, the samples were contaminated with parasites, due to the high saturation of the test weight; the eggs were placed on the surface of the coverslip snatch. Next, carefully and completely vertical, the coverslip was removed and placed on glass slides and examined using light microscopy Parasitology Laboratory of Parasitology, Faculty of Veterinary Medicine, Islamic Azad University, Kazeroon.

Results and findings:

Of 150 soil samples, 95 samples (63.4%) with infection and 55 cases (36.6%), no contamination was detected. The city of Darab study with 24 patients (80%) and highest khonj with 13 (43.33) had the lowest contamination. Also Fasa, Jahrom and Estahban with (60%), (56.67%) and (76.67%) was detected (Table and Figure 1)

95 infections were diagnosed in 33 cases (34.7%), 23 cases (54.2%), 11 cases (11.57%) and 17 cases (17.96%) in order to assess where children play around the restroom where people sit around the buffet parks and green spaces. (Table I and table 2)

Drab studied three parks, infected 27

parasites were isolated from 24 soil samples containing parasite *Ascaris* (37.03%), *Toxocara* eggs (14.81%), *Dicrocoelium* (7.4%) and oocysts (40.74%), respectively (Table and Figure 3).

Among the three parks studied in the city park in town to play the 10 soil samples, all 10 contaminated samples (100%), Allah Park Square, with seven contaminated samples (70%) and also a children's park with 7 contaminated samples (70%), respectively (Table and Figure 4).

the three parks in the city Khonj under study were isolated from 13 soil samples contaminated with parasites that includes parasites *Ascaris* 17 (23.52%), protozoa (82/58%), *Dicrocoelium* (5.88%) and *Trico astranzhilideh* (11.76%), respectively (Table and Figure Number 5).

Of the three parks in the city, Park Town, 500 sets of 10 soil samples contaminated with 6 samples (60%), Park City with three contaminated samples (30%) and Foothills Park with four contaminated samples (40%). (Table and Figure 6)

Corruption in city parks studied three of the 18 contaminated soil samples, 12 were isolated parasites, including *Ascaris* parasites (41.67%), protozoa (8.33%), *Toxocara* (16.67%) and *tinea* (33.33%). (Table and Figure 7).

Of the three parks in the city, the Azadi Park of 10 soil samples contaminated with 8 cases

(80%) City Park with five contaminated samples (50%) and also Alameda Park also infected with 5 samples (50%) was observed. (Table and Figure 8).

Jahrom City parks were in three of the 17 contaminated soil samples were separated by 28 parasites, including *Ascaris* parasites (28.57%), *Toxocara* (14.28%), protozoa (50%) and *Dicrocoelium* (7.14%) isolates will. (Table and Figure 9).

Of the three parks, forest parks, 6 out of 10 soil samples contaminated samples (60%), and 5 Park Khayyam contaminated samples (50%) and Chamran Park with six contaminated samples (60%), respectively. (Table and Figure 10)

Estahban the three parks of the city, 27 parasites were isolated from 23 samples of contaminated soil containing eggs of *Fasciola* parasites (11/11%), *Toxocara* (22.22%), *Dicrocoelium* (14.81%), *Trico astranzhilideh* (7.4%) and protozoa (44.44%) was isolated. (Table and Figure 11).

The three parks studied Park waterfall of 10 soil samples, all 10 contaminated samples (100%), Park Vakil Abad with six contaminated samples (0 to 6%), and Park Circle teacher with seven contaminated samples (70%), respectively. (Tables and graphs Number 12).

Table 1- Study of parasitic infections studied soils city parks

Name of city	Number of samples	Contaminated samples	Non-infected samples	Percent contamination
Fasa	30	18	12	60
Jahrom	30	17	13	56.67
Khonj	30	13	17	43.33
Darab	30	24	6	80
Estahban	30	23	7	76.67
Total	150	95	55	63.33

Table 2- contamination of various parts of the city parks

Around the park	Fasa	Jahrom	Khonj	Estahban	Darab
Children's play area	8	3	4	10	8
Around W.C.	2	5	4	5	7
Seating people	---	3	3	3	2
Around park Buffet	3	4	1	1	2
Green Space	5	2	1	4	5

Table 3- Number and types of parasites isolated in Darab city

Type of parasite	No.	Percent
<i>Ascaris</i>	10	37.03
<i>Toxocara</i>	4	14.81
Oocysts	11	40.74
<i>Dicrocoelium</i>	2	7.4

Table 4- Darab city contamination

Darab Park Name	Number of samples	Contaminated samples	Non-infected samples	Percent contamination
Shar-e-Bazi Park	10	10	-	100
Allah Square Park	10	7	3	70
Children's park	10	7	3	70
Total	30	24	6	80

Table 5- The number and types of parasites isolated city Khonj

Type of parasite	No.	Percent
Ascaris	4	23.52
Protozoa	10	58.82
Dicrocoelium	1	5.88
Trico astranzhilideh	2	11.76

Table 6- Khonj City Contamination

Khonj Park Name	Number of samples	Contaminated samples	Non-infected samples	Percent contamination
500 units Town Park	10	6	4	60
City Park	10	3	7	30
Foothills Park	10	4	6	40
Total	30	13	17	43.33

Table 7- The number and types of parasites isolated in Fasa city

Type of parasite	No.	Percent
Protozoa	1	8.33
Ascaris	5	41.67
Toxocara	2	16.67
Taenia	4	33.33

Table 8- Fasa city contaminations

Fasa Park Name	Number of samples	Contaminated samples	Non-infected samples	Percent contamination
Azadi Park	10	8	2	80
City Park	10	5	5	50
Alameda park	10	5	5	50
Total	30	18	12	60

Table 9- The number and types of parasites isolated in Jahrom city

Type of parasite	No.	Percent
Ascaris	8	28.57
Toxocara	4	14.28
Protozoa	14	50
Dicrocoelium	2	7.14

Table 10- Jahrom city contaminations

Jahrom Park Name	Number of samples	Contaminated samples	Non-infected samples	Percent contamination
Forest Park	10	6	4	60
Khayyam Park	10	5	5	50
Chamran Park	10	6	4	60
Total	30	17	13	56.67

Table 11- The number and types of parasites isolated in Estahban city

Type of parasite	No.	Percent
Fasciola	3	11.11
Toxocara	6	22.22
Protozoa	12	44.44
Dicrocoelium	4	14.81
Trico astranzhilideh	2	56.67

Table 12- Estahban city contaminations

Estahban Park Name	Number of samples	Contaminated samples	Non-infected samples	Percent contamination
Falakeh Moalem Park	10	6	3	70
Vakilabad Park	10	7	4	60
Falls Park	10	10	-	100
Total	30	18	12	60



Figure 1 - Percentage of cities pollution

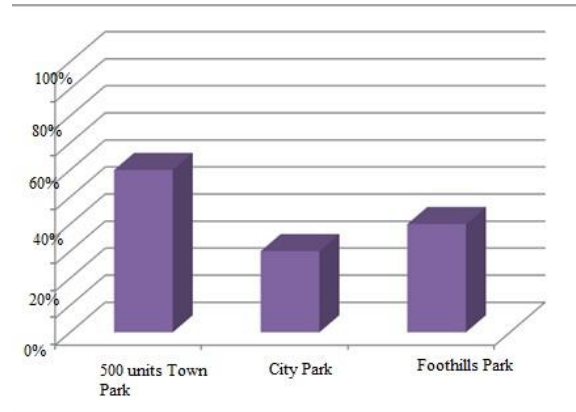


Figure 4- Percentage of pollution in Khonj city parks

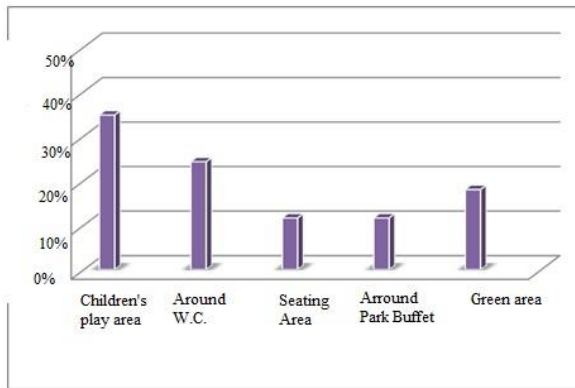


Figure 2- the amount of pollution in different parts of the city parks

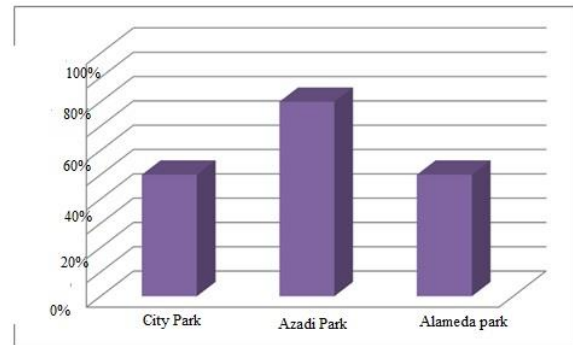


Figure 5- Percentage of pollution in Fasa city parks

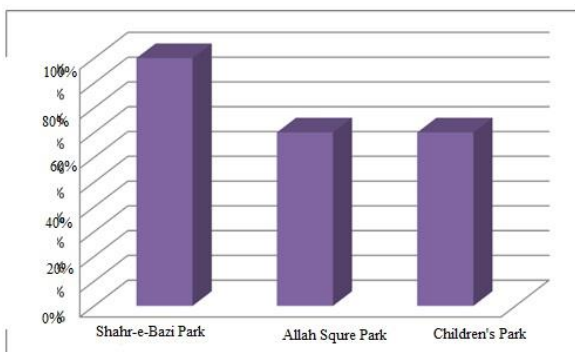


Figure 3- Percentage of pollution in Darab city parks

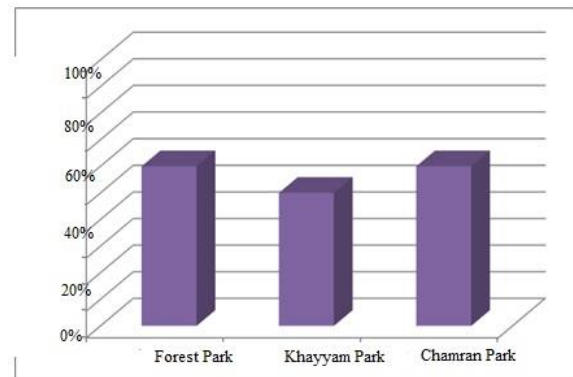


Figure 6- Percentage of pollution in Jahrom city parks

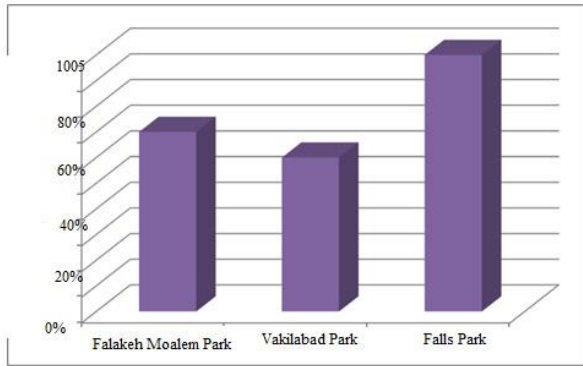


Figure 7- Percentage of pollution in Estahban city parks

Discussion and conclusions:

The study findings showed that 95 soil samples from the southern province of parasitic infections, parasitic infections, and 120 cases were isolated. At least two different parasite species were isolated from 24 soil samples. The number of oocysts and cysts separated by parasitic protozoa 47.5%, *Ascaris* 22.5%, *Toxocara* eggs 13.3%, *Taenia* eggs and 3.35%, 10% *Fasciola* eggs and egg creams *Dicrocoelium* *Tricot* family strategies 3.35%, respectively.

The research findings showed that the city of Darab, 37.03% park parasite *Ascaris*, 14.81% *Toxocara* eggs, 7.4% egg *Dicrocoelium* and 40.74% were contaminated with oocysts. Also khonj city by 23.52% park parasite *Ascaris*, 58.82% of the eggs protozoa, 5.88% to *Dicrocoelium* and 11.76% were infected with parasites *Trico astranzhilideh*.

In Fasa city, 41.67% infected with *Ascaris* parks, 8.33% to protozoans, 16.67% for *Toxocara* and 33.33% were infected with *Taenia*. In Jahrom city, *Ascaris* 28.57%, *Toxocara* 18.28%, 50% and protozoa *Dicrocoelium* 7.14% contamination was found. In the Estahban city, *Fasciola* 11.11%, *Toxocara* 22.22%, *Dicrocoelium* 14.81%, *Trico astranzhilideh* 7.4% and protozoa 44.44% were contaminated.

The study was conducted in Hamadan in 2000, took an average infection rate 78.9% set by the province to the south of the 5 cities (Fasa, Jahrom, Estahban, Darab and Khonj) (63.33 %) was higher pollution. (6) In a study conducted in 2005, in Kerman, average 25.7 compared to 5% contamination, which marked the southern city of Fars province (33.63%) is lower. (7) The study was conducted in southern Thailand and the Hanover show that each of the 64% and 63.5% were infected with 5 cities in the south of the province is almost similar. (16 and 32)

In 2012, studies showed that Boyer-Ahmad Province kohgiluyeh same amount of pollution in city corruption and pollution Chamram (60%) and the

same amount of pollution in the city khonj Dena and pollution in the city (43.33%). (10)

In the present study, the average in the southern province of Fars highest contamination of eggs isolated *Ascaris* with 35.69% accounted for than the province rate Ascariasis 48.41%, reported pollution is less. (6)

A study in Kerman infection *Ascaris* eggs 8.6% less pollution than southern province of Fars. (7)

Pollution southern Fars province in southern Thailand is almost similar, because of the pollution; the most polluted region in terms of both the isolated parasite *Ascaris* is dedicated. (23)

In a study that was conducted in Hanover *Ascaris* 24.5% devoted to the study of pollution resembles arranged. (16) Oleyaei and Gorjizadeh in 2012 in Kohgiluyeh Boyer Ahmad, *Ascaris* infection rate of approximately 48.58% determined that pollution represents more than in the southern province of Fars. (10) Study in Sydney (1987) *Toxocara* infection accounted for 25%, which was higher than that of the southern province of Fars. (17)

Hannover study of *Toxocara* infection accounted for 28%, which was higher than that of the southern province of Fars. (16) In a study in Hamadan, *Toxocara* 36.8% ratio of pollution accounted for much of the south of the province. (6) Also in the study, which was conducted in 1391 in Boyer Ahmad province *Toxocara* kohgiluyeh about 18.75% had infected the infection rate similar to the rate of *Toxocara* infection in the southern province of Fars. (10)

Perhaps there is a common sight in public places and parks parasites in the soil is not so important, but a little more professional to potential contaminants in the soil carefully, we will realize that the most dangerous and deadly and often fatal disease seen easily and with no knowledge of the pollution of parks and public places are likely to be transmitted to humans. Examples of parasitic eggs which unfortunately was seen in the south of the province, is *tinea*.

Although many different species can be included in this category, but one of the most dangerous parasites that may be isolated *Taenia* eggs in this group, *Echinococcus granulosus* that the eggs of these parasites can be transmitted to humans by the soil to make the importance and danger of hydatid cyst in general is given.

As well as other parasites isolated on *Ascaris* infection accounted for most of the cases it is extremely dangerous to humans transmitted through contaminated soil can cause visceral larva migrans and ocular larva migrans is caused much stiffer body parts and blindness.

Other parasite isolated from soil in turn is important for high which in turn can cause serious complications and sometimes different parts of the body. Due to the separation of dangerous parasite eggs in the soils of south park province, seems to be controlling and preventing pollution such measures be considered.

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