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EPIDEMIOLOGICAL STUDIES ON THE ROLE OF FISH IN TRANSMITTING SOME ZOONOTIC DISEASES TO MAN

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SUMMARY

This study was performed for determination of the role played by fish in transmitting some bacterial and parasitic zoonoses to man. A total of 300 fish of *Tilapia* spp. were collected (50 from a farm in El-Fayoum Governorate, 100 from a farm in Beni-Suef Governorate and 150 from Beni-Suef markets). In addition, 73 humans (60 fish sellers and 13 farm workers) were examined. *Staph. aureus*, *Aeromonas hydrophila*, *Proteus* spp., *Shigella* spp. *Pseudomonas aeruginosa* and *Pseudomonas fluorescence* were isolated from the examined fish at percentages of 4.3, 9.7, 3.0, 1.7, 2.0 and 2.0, respectively. Among the isolated bacteria, *Staph. aureus*, *Proteus spp.* and *Shigella spp.* were found restricted to fish skin and gills, while *Aeromonas hydrophila* and *Pseudomonas* spp. were isolated from all the examined fish body parts (skin, gills, muscles and internal organs) with varying percentages. Out of the examined fish, 26.7% were harboring parasitic cysts including metacercariae of *Clinostomum complanatum*, *Heterophyes heterophyes*, *Centrocestus armatus* and *Haplorchis pumilio*. Examination of hand swabs obtained from humans demonstrated that 12.3% revealed a positive result for *Staph. aureus*. Among farm worker stool samples examined, 7.7% tested positively for *Staph. aureus* and 15.4% were *Aeromonas hydrophila*-positive. None of the parasites recovered from fish was detectable in humans. It was concluded that fish sold in the examined localities may occasionally represent a serious threat to public health as a result of its content of zoonotic fish pathogens

INTRODUCTION

Fish is the primary source of animal protein in many countries and for many millions, particularly in poorer sections of the community worldwide. With so much benefit accruing from fish as a human food source, it is important to recognize potential health hazards with which it might be associated. Fish have a significant role in possible transfer of pathogens between livestock and humans, although some of them may not produce disease in fish **(Edun et al., 2007)**.

Shewan (1977) indicated that the microbial flora of fish is a reflection of the environment in which they are caught. In addition, it was reported that faulty rearing and processing can lead also to contamination of the fish with pathogenic microorganisms **(ICMSF, 1978)**.

Fish may serve as both passive and active carriers of several bacterial zoonoses, either on the skin and gills or in the intestine. Such bacteria can be classified as belonging to the genera *Aeromonas, Pseudomonas, Escherichia, Salmonella, Shigella, Proteus, Staphylococcus, Erysiplothrix* and others which can be incriminated in food poisoning, skin disorders, allergic conditions as well as other infections **(Janssen, 1970** and **Lawson, 1970)**.

Aeromonads are ubiquitous Gram-negative bacteria that are native to aquatic environments **(Hazen et al., 1978)**. *Aeromonas hydrophila* (*A. hydrophila*) has been recovered from a wide-range of freshwater fish species and occasionally from marine fish **(Larsen and Jensen, 1977)**. However, conflicting views have been expressed over the precise role of *A. hydrophila* as a fish pathogen. Some researchers contend that the organism is only a secondary invader of previously weakened hosts, while others believe it to be a primary pathogen of freshwater fish associated with several disease conditions including tail rot, fin rot and hemorrhagic septicemia **(Eurell et al., 1978** and **Miyazaki and Kaige, 1985)**.

The bacteria belonging to the genus *Pseudomonas* are present in most natural waters and infect most species of fish. These bacteria are considered opportunistic pathogens, causing disease when the host is subjected to stress. *Pseudomonas* spp. have been credited with causing pseudomonad septicemia, red spot disease and fin/tail rot in fish **(Pattic et al., 2001)**. *Pseudomonas aeruginosa* is an opportunistic human pathogen. It may cause urinary, respiratory, gastrointestinal, skin as well as bone and joint infections, particularly in immunocompromised individuals.

Humans and domestic animals are commonly infected by helminth parasites transmitted from fish **(WHO, 1995)**. Fish borne zoonotic trematodes (FZT) are estimated to infect more than 18 million persons world-wide, the number at risk may be much greater **(WHO, 2004)**. FZT include many species, especially representatives of the families *Heterophyidae, Echinostomatidae* and *Opisthorchiidae*. Although their metacercarial cysts are easily inactivated by heating at 60 °C or freezing to -20 °C, FZT are highly prevalent in many regions, especially in Asia and the Middle East where food traditions include eating raw or improperly cooked fish dishes **(Keiser and Utzinger, 2005)**. Several species of the genus *Clinostomum* are frequent parasites of fish that represent the second intermediate host harboring the encysted metacercariae in several organs, while piscivorous birds are the final host **(Lo et al., 1981)**.

Fish-borne zoonoses not only pose risks to food safety and human health but also may cause substantial economic losses in the aquaculture industry, resulting from restrictions on exports and reduced consumer demand because of food safety concerns **(WHO, 2004)**.

The occurrence of fish-borne zoonoses in different localities in Egypt is still a disputable matter. Hence, the present study was undertaken to estimate the prevalence of bacterial and parasitic zoonoses in fish and the role played by fish in transmitting these diseases to man in Beni-Suef and El-Fayoum Governorates.

MATERIAL AND METHODS

This study was conducted in the period September 2005 through September 2006.

1. Sampling:

1.1. Fish samples:

A total of 300 fish of *Tilapia* spp. were collected from different locations; 50 from an intensive farm in El-Fayoum Governorate, 100 from a semi-intensive farm in Beni-Suef Governorate and 150 from different markets in Beni-Suef Governorate. Data about the construction of the examined farms, including the type of pond (earthen or cement), rearing system (monoculture or polyculture) as well as the water source and the used food items were obtained. The samples were properly transferred to the laboratory with minimum of delay, where they were examined grossly for any abnormalities in color, odor, scales, muscles and eyes. For bacteriologic and parasitologic examination, surface swabs beside samples from gills, scales, muscles and internal organs (liver, spleen and kidneys) were taken from each fish.

1.2. Human samples:

A total of 73 humans were examined. Among them, 60 were fish sellers working at the same markets from which fish samples were collected; from each, a hand swab was taken. The remaining 13 individuals were workers in El-Fayoum farm, from them hand swabs and stool samples were obtained. Data concerning clinical signs stressing on diarrhea and skin lesions were registered. The gathered samples were rapidly transported to the laboratory in an ice box where they were subjected to bacteriologic and parasitologic examination.

2. Bacteriologic analysis of samples:

2.1. Enrichment and isolation procedures (Collee and Marr, 1996).

2.1.1. Fish samples:

Surface swabs, scales, gills, pieces of muscles and internal organs (liver, spleen and kidneys) were aseptically transferred to sterile tryptone soya broth tubes and then incubated at 25-27 °C for 18-24 hrs. Loopfuls from the broth cultures were streaked onto tryptone soya agar plates and incubated at 25-27 °C for 24-36 hrs.

2.1.2. Stool samples:

A loopful from each stool sample was inoculated into a sterile tryptone soya broth tube, supplemented with 20 mg/L novobiocin and incubated at 37 °C for 18-24 hrs, after which a loopful was streaked onto tryptone soya agar plate and then incubated at 37 °C for 24 hrs.

2.1.3. Hand swabs:

Each swab was transferred aseptically to a tryptone soya broth tube and then incubated at 37 °C for 18-24 hrs after which a loopful was streaked onto tryptone soya agar plate and then incubated at 37 °C for 24 hrs.

2.2. Identification of the isolates:

Pure colonies were identified according to **Collee et al. (1996)** on the bases of:

2.2.1. Colonial morphology.

2.2.2. Gram staining (Cruickshank et al., 1975).

2.2.3. Biochemical identification.

2.2.3.1. identification of Gram-negative rods:

2.2.3.1.1. Oxidase test.

2.2.3.1.2. API 20 identification system (Murray et al., 2003):

API20 E was employed for identification of Enterobacteriaceae and other non-fastidious Gram-negative rods whereas for identification of non-fastidious non-enteric Gram-negative rods, API20 NE was used.

2.2.3.2. Identification of Gram-positive cocci:

This was achieved through application of Catalase, Coagulase, Urease and Sugar fermentation tests beside growth onto blood agar plates.

3. Parasitologic analyses of samples:

3.1. Fish samples:

The branchial cavity and the muscles of the fish were examined for detection of encysted metacercariae or any other encysted larval stages according to **Jain (2002)** and **Kaewkes (2003)**.The cysts recovered from the branchial cavity were opened and the metacercariae were freed, preserved, stained with acetocarmine and examined microscopically. On the other hand, the recovered metacercariae from fish muscles were identified through experimental infection of parasite-free, one month old cats to obtain the adult stages of the parasites according the technique recommended by **Mahmoud (1983)**.

3.2. Stool samples:

Stool samples were examined parasitologically, according to **Jain (2002)**.

RESULTS

Table (1): Results of bacteriologic examination of fish samples

Site (No. of samples) / Isolated bacteria	El-Fayoum farm (50)		Beni-Suef farm (100)		Markets (150)		Total (300)	
	No.	%	No.	%	No.	%	No.	%
Staph. aureus	2	4	3	3	8	5.3	13	4.3
A.hyrophila	2	4	10	10	17	11.3	29	9.7
Proteus spp.	1	2	2	2	6	4	9	3
Shigella spp.	1	2	2	2	2	1.3	5	1.7
Ps. aeruginosa	2	4	3	3	1	0.7	6	2
Ps. fluorescence	1	2	2	2	3	2	6	2
Total	9	18	22	22	37	24.7	68	22.7

Table (2): Occurrence of isolated bacteria in different parts of the examined fish

Isolated bacteria (No.) \ Sample	Surface swabs	Gills	Muscles	Kidneys	Liver	spleen
Staph. aureus (13)	10 (76.9%)	3 (23.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
A.hydrophila (29)	6 (20.7%)	5 (17.2%)	5 (17.2%)	3 (10.3%)	4 (13.8%)	6 (20.7%)
***Proteus* spp.** (9)	5 (55.6%)	4 (44.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
***Shigella* spp.** (5)	4 (80%)	1 (20%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Ps. aeruginosa (6)	1 (16.7%)	0 (0.0%)	0 (0.0%)	1 (16.7%)	2 (33.3%)	2 (33.3%)
Ps. flurescence (6)	1 (16.7%)	1 (16.7%)	1 (16.7%)	2 (33.3%)	0 (0.0%)	1 (16.7%)
Total (68)	27 (39.7%)	14 (20.6%)	6 (8.8%)	6 (8.8%)	6 (8.8%)	9 (13.2%)

Table (3): Occurrence of the parasitic cysts in the examined fish

Item	No. of fish samples	Positive samples			
		No. (%)	Fish harboring cysts*		
			In branchial cavity	In muscles	Both in branchial cavity & muscles
El-Fayoum farm	50	10 (20)	1 (10%)	2 (20%)	7 (70%)
Beni-Suef farm	100	25 (25)	5 (20%)	7 (28%)	13 (52%)
Markets	150	45 (30)	13 (28.9%)	17 (37.8%)	15 (33.3%)
Total	300	80 (26.7)	19 (23.8%)	26 (32.5%)	35 (43.8%)

*The recovered cysts from the branchial cavity were *Clinostomum complanatum*, whereas experimental infection in cats identified those detected in muscles as belonging to *Heterophyes heterophyes, Centrocestus armatus and Haplorchis pumilio.*

Table (4): Results of bacteriologic and parasitologic examination of human samples

Examined individuals (No.) \ Recovered agents	Bacteria				Parasites
	Staph. aureus		*A. hydrophila*		
	Hand swabs	Stool	Hand swabs	Stool	Stool
Fish sellers (60)	7 (11.7%)	-	0 (0.0%)	-	-
Farm workers (13)	2 (15.4%)	1 (7.7%)	0 (0.0%)	2 (15.4%)	1* (7.7%)
Total (73)	9 (12.3%)	1 (1.4%)	0 (0.0%)	2 (2.7%)	1 (1.4%)

* It was identified as *Entamoeba histolytica* cyst.

DISCUSSION

Table (1) revealed that the total percentages of the isolated bacteria were 18, 22 and 24.7 in El-Fayoum farm, Beni-Suef farm and markets, respectively. The higher level of bacterial isolation reported in markets as compared to that in farms is indicative for the extent at which the fish might be exposed to infection post harvesting during handling, transportation and selling **(Ghittino, 1972)**. On the other hand, the relative variation between the two farms at the level of bacterial isolation may be attributed to the more proper hygienic measures applied in El- Fayoum farm. In contrast to the cement floor of the latter farm, the earthen floor of Beni-Suef farm could be considered as a contributing factor supplying a suitable environment increasing the bacterial load in fish environment.

Table (1) clarified also that the total percentages of isolation of different microorganisms from the examined fish were 4.3, 9.7, 3.0, 1.7, 2.0 and 2.0 for *Staph. aureus*, *Aeromonas hydrophila*, *Proteus* spp., *Shigella* spp. *Pseudomonas aeruginosa* and *Pseudomonas fluorescence*, respectively. These results are in accordance with those of **Al-Harbi and Uddin (2003)** who could identify 18 bacterial species from rearing pond water and sediment as well as the gills and intestine of healthy hybrid tilapia cultured in Saudi Arabia. They found that in pond water, *A. hydrophila* and *Pseudomonas* spp. were the most predominant bacterial species (prevalence > 10%). Conversely, higher levels of isolation were reported by **Newaj-Fyzul et al. (2008)** who recovered *Aeromonas* spp and *Pseudomonas* spp. from fish slurry at a rate of 44.0% and 60.0%, respectively.

It is worth mentioning that isolation of the same types of bacterial species from fish in spite of their different sites of collection is an indication for a possible common source of infection but of varying degrees. In most instances, contamination results from the poor quality of water sources and sewage pollution. Furthermore, fish may get infected through the improper and unhygienic handling. However, another possible reason for contamination could be due to the potential occurrence of pathogenic bacteria in aquaculture feeds used in the culture systems.

One of the most important fish-borne bacterial zoonoses is *A. hydrophila* which was detectable at a higher rate in market fish (11.3%) than in farmed fish (4.0 % in El-Fayoum farm and 10.0% in Beni-Suef farm), a result which is lower than that reported by **Cesar et al. (2001)** who could isolate *A. hydrophila* from 29.0% of aquacultured fresh water fish. The isolation rate of *A. hydrophila* in this study (9.7%) is lower than that reported by **Ola-Basha (2007)** who isolated the organism at a rate of 60.0% from *Tilapia nilotica* in Alexandria Governorate, Egypt. *A. hydrophila* was previously documented as a causative agent of hemorrhagic septicemia in *Tilapia nilotica* caught from River Nile, Egypt (**Amin et al., 1985**). *Shigella* spp. and *Pseudomonas* spp are among the important fish-borne pathogens detected in this study. They are commonly associated with fecal contamination of fish environment. Their presence is indicative for the possible occurrence of other enteric pathogens in fish environment.

Most of the bacteria isolated from fish in this study are naturally found in water and soil. The presence of bacteria is of significance when considering the potential abilities of some species of the bacteria to cause fish and human infection **(Edun et al., 2007)**. However, the presence of potential human pathogens suggests that fish improperly handled, undercooked or consumed raw may cause various diseases to susceptible individuals.

Of the different parts of the fish analyzed, skin surfaces showed the highest level of the isolated bacteria (39.7%), followed by gills (20.6%) and spleen (13.2%) whereas muscles, kidneys and liver showed lower levels of bacterial isolation (8.8% for each) as shown in Table (2). Virtually, fish are predisposed to systemic bacterial infection by handling trauma or adverse growth conditions such as inadequate feeding, poor water quality and overstocking **(Roberts and Sommerville, 1982** and **Paperna, 1984)**. As regards to fish muscles, 6 bacterial isolates were detected; 5 of them were *A. hydrophila* and the last was *Ps. flurescence*. **Shewan (1971)** assumed that the bacterial count/gram in fish muscles ranges from zero to one thousand depending on the condition of the environment in which the fish live, degree of exhaustion, stress during catching and the health status of the fish.

The findings in this study confirm that fish can be infected with a variety of bacterial species especially those in fresh water environment. Some of the isolates may be derived from external sources like soil and sediment as *Pseudomonas* spp. and *Proteus* spp. Hence, the fish are transient carriers of such bacteria **(Trust and Sparrow, 1974)**. The isolates from gills and skin could be mainly accounted for the filtering effect of the gills or the slime layer of the skin and partially as a result of active bacterial multiplication and adaptation. Such bacteria may spread from gills to the vascular system and invade the fish flesh as well as organs which are not in direct contact with the external aquatic environment **(Shewan, 1971)**. However, the chance of flourishing these bacteria in organs is reduced because of the presence of special cells having phagocytic activity **(Austin and Mcintosh, 1988)**.

Among the isolated bacteria, *Staph. aureus*, *Proteus spp.* and *Shigella spp.* were found restricted to fish skin and gills, whereas *A. hydrophila* and *Pseudomonas* spp. were isolated from all the examined fish body parts (skin, gills, muscles and internal organs) with varying percentages. These results are to some extent in agreement with the data obtained by **Olayemi et al. (1990)** who could isolate *A. hydrophila* (6.0%), *Proteus vulgaris* (4.7%), *Shigella flexneri* (1.1%), *Staph. aureus* (2.8%) and *Pseudomonas* spp. (6.6%) from skin, gills and small intestine of examined fish. Isolation of *Staph. aureus* from different parts of fish was reported by many authors **(Trust and Sparrow, 1974** and **Saggers and Gould, 1989)**. It could be referred to contamination of fish during handling or from fish vessels **(Brown and Dorn, 1977)**. *Staph. aureus* has been recorded causing corneal damage in fresh water fish **(Shah and Tyagi, 1986)**. Isolation of *Proteus* spp. from the gills and intestine of tilapia was reported by many authors **(Jennings, 1975** and **Sakata et al., 1980)**. *Proteus* spp. are normally found in the intestine of man and animals, polluted water, soil and vegetables. Some are opportunistic human pathogens potentially causing urinary tract infection, food poisoning and gastro-enteritis **(Pelczar et al., 1993)**.

Macroscopic lesions like skin and gill congestion, skin ulcers and exophthalmia were observed in some of the examined fish. Such lesions might be caused by the recovered bacterial agents as *A. hydrophila*, *Pseudomonas spp.* and *Staph. aureus*. However, the absence of macroscopic lesions in other fish examined does not necessarily mean their freedom from pathogens as many of zoonotic agents transmitted to man via fish are not pathogenic in fish. Additionally, it is possible for commensal organisms causing few problems for aquatic species to cause health hazards in man **(Tobly et al., 2007)**.

Shifting to the results of parasitologic examination of fish as shown in Table (3), it was found that 80 fish (26.7%) were infected with parasitic cysts. This result is less than that of many authors as **Paperna (1980)** (69.0%) and **Rifaat et al. (1980)** (70.0%). The distribution of parasitic cysts in different parts of the examined fish revealed that out of 80 infected fish, 19 (23.8%) were found harboring cysts in the branchial cavity and 26 (32.5%) in muscles. On the other hand 35 (43.8%) were classified harboring cysts in both branchial cavity and muscles.

Microscopic examination of the excysted cercariae from cysts in the branchial cavity and their identification morphologically classified them as *Clinostomum complanatum* (*C. complanatum*) metacercarae. The frequency of *C. complanatum* recorded in this study (23.7%) is well in line with **Aohagi et al. (1992)** who recorded the parasite at a rate of 20.5%. On the contrary, **Yimer and Enyew (2003)** and **Abd El-Galil et al. (2006)** could isolate *C. complanatum* from the branchial cavity of *Tilapia nilotica* at higher percentages (57.4 and 50.2 respectively) than that recorded in this study. *C. complanatum* is commonly described as a digenetic trematode naturally parasitizing the throat and esophagus of piscivorous birds especially heron. Their metacercariae cause yellow grub disease in fish. On the other hand, **Lo et al. (1982)** postulated that when a large amount of cercariae of *C. complanatum* penetrate the fish body at the same time they may cause irritation and lesions to fish tissue, which may induce mortality of small fish. *C. complanatum* causes sporadic human cases, often asymptomatic. It was incriminated as a cause of halzoun syndrome expressed as cough and pharyngitis **(Martin et al., 2000)**. The parasite was reported in humans from many countries in Asia as in Japan and Korea **(Isobe et al., 1994)**.

The recovered adult worms obtained by experimental infection of cats by fish muscles harboring parasitic cysts were found belonging to the *Heterophyidae* family of trematodes; *Heterophyes heterophyes, Centrocestus armatus* and *Haplorchis pumilio*. This result is supported by the fact that cat represents one of the final host species concerning these trematode worms. The current data are parallel to that of **Well and Randall (1956)** who recovered *Heterophyes heterophyes* from two experimentally infected cats. Detection of *Heterophyes heterophyes* in cats was published by many authors as **Tosson et al. (1981)** who proved that *Heterophyes heterophyes* among cats was 7.01% and **El-Mokaddem (1982)** who suggested heterophiasis to be 70.0% among cats and 4.2% among people.

Haplorchis pumilio was originally described from birds and mammals in Egypt; it is also known to be distributed in Asia **(Velasquez, 1982** and **Yu and Mott, 1994)**. In Thailand, **Radomyos et al. (1983)** detected the parasite in stool samples of 12 out of 411 patients suffering from intestinal troubles. Moreover in a study carried out by **Murrell et al. (2007)**, metacercariae of *Haplorchis pumilio, Haplorchis taichui* and *Centrocestus formosanus* were recovered from fish in Vietnam with *Haplorchis pumilio* being the most common FZT species constituting more than 58.0% of all metacercariae recovered. Survey data on larval fluke infection in intermediate hosts can be used as an epidemiological index for the distribution of infection in an area. The recovery of FZT from the examined fish in various locations indicates that the snail vectors (e.g., *Melanoides tuberculata* and *Pirenella conica*), the suitable vertebrate intermediate (fish) and the reservoir (fish-eating birds, dogs, cats and pigs) hosts were common in the localities where the study was done. Intensification of aquaculture, use of human and animal manure for pond fertilization and, moreover, the increased consumption of fish with a tradition of eating raw fish may be contributing factors for infection with FZT **(WHO, 2004)**. These issues need to be investigated if effective means for prevention of transmission are to be developed. Major sources of infected fish responsible for trematode transmission to humans must be ascertained because FZT metacercariae have been found in both wild and farmed fish **(Giboda et al., 1991** and **Chai et al, 2005)**.The results illustrated in Table (4) indicated that out of 73 hand swabs, taken from 60 fish sellers and 13 farm workers, 9 (12.3%) revealed a positive result for *Staph. aureus* whereas none of them harbored *A. hydrophila*. Furthermore among 13 farm worker stool samples examined, one (7.7%) tested positively for *Staph. aureus* and two (15.4%) were *A. hydrophila*-positive. It is worth noting that none of bacteriologically positive individuals had skin or gastrointestinal disorders. This finding can be explained in light of published reports indicating that a high proportion (30-35%) of healthy humans have staphylococci in the nasopharynx and on the skin (**Wilson and Miles, 1975** and **Pedro and Boris, 1994**). Besides, about 20.0% of normal individuals harbor the organism in their intestinal tract **(Stewart, 1973)**. Nevertheless, *Staph. aureus* in people is responsible for skin infection, eye infection, toxic-shock syndrome and food poisoning. Farm workers were found exhibiting a higher rate of isolation of *Staph. aureus* (15.4%) than fish sellers (11.7%), a result which is mainly referred to the intimate contact of farm workers with fish and its environment..The isolation of *A. hydrophila* from the stool samples of apparently healthy farm workers is supported by the assumption of **Araujo et al. (1991)** that about 1.0% of healthy adults are carriers for *A. hydrophila*. However, it has gained in recent years public health recognition as an opportunistic pathogen implicated in gastroenteritis, septicemia, cellulites, colitis and wound infections in humans **(Krovacek et al., 1992** and **Gavriel et al., 1998)**.

A notable finding is that none of the parasites recovered from fish in this study was detectable in human beings examined. This can be attributed to the dependence of such parasites, to develop their adults in man, on the tradition of consuming fish raw or improperly cooked rather than being related to handling of infected fish.

As a result of the above findings, it can be concluded that fish sold in Beni-Suef and El-Fayoum Governorates may occasionally represent a serious threat to public health as a result of its content of zoonotic fish pathogens. Therefore, proper control programs at the farm and market levels as well as intensive public education should be strictly followed to achieve effective reduction of these pathogens.

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دراسات وبائية عن دور الأسماك فى نقل بعض الأمراض المشتركة للإنسان

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أجريت هذه الدراسة بهدف معرفة دور الأسماك فى نقل الأمراض البكتيرية والطفيلية للإنسان بمحافظتى بنى سويف و الفيوم بمصر. تم جمع عدد ٣٠٠ من أسماك البلطي من مزرعتين إحداهما فى الفيوم (٥٠) و الأخرى فى بنى سويف (١٠٠) إلى جانب الأسواق المنتشرة فى مركز بنى سويف (١٥٠)، وذلك إضافة إلى ٧٣ عينة من الأشخاص المتعاملين مع السمك سواءً عمال المزارع (١٣) أو البائعين (٦٠). وقد أظهرت النتائج أن البكتريا التي تم عزلها من الأسماك كانت من أنواع الميكروب العنقودي (٤,٣%)، والأريمونس هيدروفيلا (٩,٧%)، والبروتيس (٣,٠%)، والشيجللا (١,٧%)، والسودومونس (٤,٠%). وبإلقاء الضوء على الأسماك الإيجابية بكتريولوجياً لوحظ اقتصار عزل كلٍ من الميكروب العنقودى، والبروتيس، والشيجللا على السطح الخارجي والخياشيم، في حين أمكن عزل الأريمونس هيدروفيلا، و السودومونس - إلى جانب ذلك - من العضلات، والأعضاء الداخلية. وفيما يتعلق بالفحص الطفيلي للأسماك تبين إصابة ٢٦,٧ % بحويصلات طفيلية ثبت من خلال الفحص المجهري و العدوى المعملية للقطط أنها لطفيليات الكلينوستومم، والهتروفيس، والسنتروسيستس، والهبلوركيس. وقد أثبت الفحص البكتريولوجي لمسحات أيدي الآدميين أن ١٢,٣% منهم كانوا إيجابيين للميكروب العنقودي الذي أمكن عزله كذلك هو والأريمونس هيدروفيلا من عينات براز عمال المزارع بنسبتي ٧,٧%، و ١٥,٤% على الترتيب. هذا، ولم تثبت الدراسة وجود إصابات بشرية بأيٍ من الطفيليات التي رصدت بالأسماك. وقد أشارت نتائج هذه الدراسة إلى أن الأسماك المتداولة بمحافظتي بنى سويف و الفيوم يمكن أن تؤدي أحياناً إلى بعض المخاطر الصحية في الإنسان بما تحتويه من مسببات مرضية مشتركة.