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مركز صالح عبد الله كامل
للاقتصاد الإسلامي

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تقييم لمدى خطورة استخدام الفضلات الإخراجية للدواجن وكذلك مخلفات ذبح الدواجن كغذاء لأسماك البلطي والقراميط المستزرعة عن طريق تحديد مدى التأثير على المياه والأسماك وكذلك خطورة الاستخدام على صحة الإنسان

إعـــــــداد

محمد عبد العزيز احمد عبد العزيز* إيهاب محمد إبراهيم**

*كلية الطب البيطري- جامعة القاهرة-قسم أمراض الأسماك ورعايتها

** كلية الطب البيطري- جامعة القاهرة- قسم البكتريولوجي

مركز صالح كامل - جامعة الأزهر - مدينة نصر - القـاهرة -
ت: ٢٦١٠٣٠٨-٢٦١٠٣١١ فاكس: ٢٦١٠٣١٢
www SAKC gq.nu
E-mail: salehkamel@yahoo.com

كلية الزراعة - جامعة الأزهر - مدينة نصر - القاهرة -
ت: ٤٠٢٤١٣٢-٤٠٢٤١٩٠ فاكس: ٤٠١١٧١٠
E-mail azwolla@yahoo com

تقييم لمدى خطورة استخدام فضلات الإخراجية للدواجن وكذلك مخلفات ذبح الدواجن كغذاء لأسماك البلطي والقراميط المستزرعة عن طريق تحديد مدى التأثير على المياه والأسماك وكذلك خطورة الاستخدام على صحة الإنسان

محمد عبد العزيز احمد عبد العزيز* - إيهاب محمد إبراهيم**
*كلية الطب البيطري- جامعة القاهرة-قسم أمراض الأسماك ورعايتها
** كلية الطب البيطري- جامعة القاهرة-قسم البكتريولوجي

الملخص

في هذا البحث تم عمل تقييم لاستخدام الفضلات الإخراجية للدواجن كغذاء لاسماك البلطي كذلك تقييم استخدام مخلفات مجازر الدواجن والفضلات الإخراجية للدواجن كغذاء لأسماك القراميط وذلك عن طريق تحديد التأثيرات السيئة لاستخدام تلك المواد على المياه والأسماك وكذلك تقييم الخطورة على صحة الإنسان . وقد أوضحت النتائج آن استخدام الفضلات الإخراجية للدواجن كان له تأثيرا سيئا على المياه تمثل في زيادة معدلات الامونيا الغير متأينة (السامة) وكذلك انخفاض معدل الأكسجين الذائب في الماء وزيادة درجة تركيز الآس الهيدروجيني . وعند إجراء الفحص البكتيري على المياه بعد استخدام الفضلات الإخراجية للدواجن وكذلك مخلفات الذبح مقارنة بنفس المياه قبل الاستخدام وجد آن هناك زيادة في معدلات وجود بعض البكتيريا مع عزل بكتيريا جديدة لم تكن موجودة في المياه قبل استخدام تلك المياه. كما وجد آن استخدام الفضلات الإخراجية للدواجن كغذاء لاسماك البلطي صوحب بتأثيرات واضحة متمثلة في معدلات نفوق بعد الاستخدام وكذلك ظهور علامات الاختناق على اسماك البلطي نتيجة لنقص الأكسجين الذائب في الماء كما وجدت بعض أعراض التسمم الدموي البكتيري على بعض الأسماك وكذلك وجدت اسماك نافقة بدون أي أعراض . وعند إجراء الفحص البكتيري على عضلات وأمعاء وكلى اسماك البلطي بعد تغذيتها على الفضلات الإخراجية للدواجن وكذلك اسماك القراميط بعد استخدام الفضلات الإخراجية ومخلفات الذبح تم عزل بعض البكتيريا المعوية الضارة للإنسان وكذلك بعض البكتيريا المسببة لبعض الأمراض في الأسماك ولم تكن موجودة في الأسماك آلتي تم تغذيتها على العلائق الصناعية . لذلك فإنه من الممكن آن نقول أن استخدام الفضلات الإخراجية للدواجن ومخلفات الذبح تمثل مشكلة كبيرة لما تحدثه من تأثيرات ضارة على المياه وكذلك على الأسماك وأيضا لما يمثله تناول تلك الأسماك من خطورة على صحة الإنسان .

Risk assessment of using of poultry droppings and poultry viscera as feeds for cultured tilapia and catfish (clarias lazera), evaluation of their tremendous effects on water, fish, as well as their human health hazards.

Abd Elaziz.M.A* and Ehab I.M**

* Department of Fish Diseases and Management, Fac. of Vet. Med. Cairo University

** Department of Bacteriology, Fac. of Vet. Med. Cairo University

SUMMARY

In this study, the use of poultry droppings as a feeds for cultured tilapia as well as the use of poultry droppings and poultry viscera as feeds for cultured cat fish (clarias lazera) was evaluated through determination of their effects on water, fish, as well as their human health hazards. The results of examination of water samples received poultry droppings revealed that the use of poultry droppings was associated with tremendous effects on some important water parameters regarding the pH, unionized ammonia and oxygen level which measure 7.8, 1.1 and 5.2 respectively (1-3 hrs) after application of poultry droppings while the average measures before adding of poultry droppings were 7.2, 0.16 and 8.3 respectively. The bacteriological examination of 10 water samples before adding of poultry droppings revealed the presence of aeromonas sp., pseudomonas sp., staph, shigella and campylobacter at percentages 60%, 40%, 10%, 20%, and 10% respectively with negative results for the presence of salmonella sp. While after receiving the poultry droppings the results referred to 60%, 40%, 20%, 40% and 30% for aeromonas, pseudomonas, salmonella, staph, shigella and campylobacter respectively. The bacteriological examination of 10 water samples after adding of poultry viscera were 40%, 50%, 40%, 40%, 20% and 40% for the presence of aeromonas, pseudomonas, salmonella, staph, shigella and campylobacter respectively while the results of examination before adding of poultry viscera where 40%, 30% and 20% for aeromonas, pseudomonas and staph with negative results for salmonella, shigella and campylobacter. The effects of use of poultry droppings and poultry viscera on the health condition of cultured tilapia and catfish revealed that the addition of poultry droppings affecting drastically the health condition

of cultured tilapia, mortalities recorded after each use of poultry droppings, some died fish showing normal appearance, others showing septicemic picture with erroded fins and gills. Also signs of asphyxia observed after adding of poultry droppings. No moralities or abnormal signs were recorded in ponds of catfish fed on poultry droppings or poultry viscera and the examination revealed normal. The bacteriological examination of samples from muscles, kidney and intestine of tilapia *(oreochromis niloticus)*and catfish *(clarias lazera)* fed on poultry droppings and poultry viscera revealed the presence of salmonella, staph, shigella and campylobacter at higher percentages in comparing to the control fish fed on pilleted ration. From the previous results, it could be concluded that the use of poultry droppings and poultry viscera as a feeds for cultured tilapia and catfish constitute a major problem as the addition of poultry droppings affect some important water parameters which drastically affecting the health condition of cultured tilapia, also the use of poultry droppings and poultry viscera add many pathogenic bacteria, some of them are highly pathogenic to fish resulting in mortalities, at the same time the fish act as a carriers to others bacteria that may be transmitted to humans which may constitute a potential health hazards.

INTRODUCTION

In the recent years, in Egypt, the efforts were directed to produce more fishes that may be share in covering the shortage in animal protein. In 1999 fish culture in Egypt, added about 226.000 ton of the total fish produced, which constitute about 35% of the total fish production in this year (*Elbana and Abd Elhamid 1999).*

The fish culture facilities in Egypt, includes earthen ponds, concrete ponds, floating cages and galvanized containers but the earthen ponds constitute the main type *(Lackey and Nielsen 1980)*.

The most important cultured fish species in Egypt are tilapia, catfish and mugil. Now intensive culturing of catfish *(clarias lazera)* alone in separate ponds increased dramatically, some farms use poultry droppings as feed for the cultured *clarias lazera*, others depends on poultry viscera and residues of poultry slaughter houses in order to reduce the eost of production of fish but of course this may have a great drawbacks.

As we now that in tilapia farms fertilizers may be added to ponds early in the growing season when phytoplankton production normally begins its spring pulse. At the same time periodic fertilization occur through the growing season or sometimes a single application made early in the growing season *(colpy 1977 and Zhao et al 2001)*.

In Egypt, the majority of fish farmers use the organic fertilizers, specially the poultry droppings not only to encourage the growth of phytoplankton but they use it as a food for fish either alone or mixed with supplemented ration in order to reduce the cost of production of fish, which may have a great drawbacks.

The aim of this study is to evaluate the use of poultry droppings as a feed for cultured tilapia, as well as evaluation of the use of poultry droppings and poultry viscera as feeds for cultured catfish *(clarias lazera)* through determination of their effects on water by comparing the results of examination of 40 water samples before and after adding of such feeds. Also determination of the effects of use of such feeds on the health condition of cultured tilapia and catfish. At the same time, bacteriological examination of different samples from muscles, kidney and intestine of tilapia and catfish *(Claris lazera)* fed on poultry droppings and poultry viscera in order to determine the bacterial pathogens that may transmitted through such feeds to fish and their public health significance in comparing with control fish.

MATERIAL AND METHODS

1- Determination of the effects of the use of poultry droppings and poultry viscera on water:

40 water samples were obtained and examined according to*(APHA 1989)* for certain chemical parameters before and after use of poultry droppings and poultry viscera in farms locating in Sharkia and Elbohaira governorate (Wady Elnatron City). Also samples of water were taken under aseptic condition before and after use of such feeds for bacteriological examination according to *(Debashis and Chanchal 1992).*

2- Determination of the effects of the use of poultry droppings and poultry viscera on the health condition of cultured tilapia and catfish *(Clarias lazera).*

Samples of tilapia fish were obtained from ponds fed on poultry droppings, Also samples of catfish (*Clarias lazera)* were obtained from ponds depends on poultry droppings and other samples obtained from ponds depends on poultry viscera as a feed for cultured catfish *(Clarias lazera).* 30 tilapia fish and 30 *clarias lazera* fish were obtained from separate ponds fed on poultry droppings Also 30 samples of *clarias lazera* obtained from ponds fed on poultry viscera. At the same time 30 tilapia and *clarias lazera* fish were obtained from ponds fed on prepared ration as a control fish.

The fish examined according to *(Post 1987)* for the health condition of such fish.

Also samples of muscles, kidney and intestine represent 20 fish from each group were taken from different fishes and examined according to *(Pal and Dasgupta (1991), Angella and Scott 1999, Gonzalez et al 2000)*for the presence of certain bacterial pathogens.

3- Bacteriological examination of samples of poultry droppings and poultry viscera.

20 samples obtained 10 include dried poultry droppings and 10 include poultry viscera were transferred to the laboratory under aseptic condition. The samples examined bacteriologically for the presence of bacterial pathogens according to*(Austin and Austin 1989).*

RESULTS AND DISCUSSION

1- Results of Determination of the effects of use of poultry droppings and poultry viscera on water:

The results of examination of 40 water samples before and after adding of poultry droppings and poultry viscera in farms locating in Sharkia and Elbohaira governorate (Wady Elnatron City). (table 1&2) revealed that the use of poultry droppings was associated with tremendous effects on some important water parameters regarding the pH, unionized ammonia and oxygen level which measure average 7.8, 1.1 and 5.2 respectively (1-3 hrs) after application of poultry droppings while the average measures before adding of poultry droppings were 7.2, 0.16 and 8.3.

The average results of examination of water samples received poultry viscera were 7.3, 0.1, 6.4 and 6.0 for pH, unionized ammonia, ionized ammonia and dissolved oxygen respectively while the average results of examination of water samples before adding of poultry viscera were (7.4, 0.07, 6.4 and 6.8) respectively.

The low level of dissolved oxygen and high level of unionized ammonia in case of water received poultry droppings specially in the presence of high pH levels may constitute a great danger on fish which may inducing mortalities, because the high levels of unionized ammonia inducing severe irritation on gills leading to hyperplasia of gill filaments, which in turn affecting the ability of gills to take the dissolved oxygen from water *(Wajshrot et al 1993, Rasmussen and Korsgaard 1996, Harris et al 1998)* which could be encouraged by the low levels of dissolved oxygen in water.

The addition of poultry droppings (high organic matter) to ponds increase the BOD (decomposition of organic matter by microorganisms) resulting in oxygen depletion which alone may leads to high mortalities unless counter measures are taken *(Stickney et al 1977)* .

The bacteriological examination of 10 water samples before adding of poultry droppings revealed the presence of aeromonas sp, pseudomonas sp., staph, shigella sp. And campylobacter at percentages 60%, 40%, 10%, 20% and 10% respectively with negative results for presence of salmonella.

While after receiving of poultry droppings the results referred to 60%, 40%, 40%, 20%, 40%, and 30% for aeromonas sp, pseudomonas sp., salmonella staph, shigella sp. And campylobacter sp. Respectively (table 3).

The bacteriological examination of 10 wate samples after adding of poultry viscera (table 4) were 40%, 50%, 40%, 40%, 20%, 40% for the presence of aeromonas sp, pseudomonas sp., salmonella, staph, shigella sp. and campylobacter respectively. While the results of examination before adding of poultry viscera were 40%, 30%, and 20% for aeromonas sp, pseudomonas sp. and staph, with negative results for salmonella, shigella sp. and campylobacter.

The results revealed that the addition of poultry droppings and poultry viscera to the water change the bacteriological character of water. Higher percentages of staph, shigella sp. And campylobacter were recorded after addition of poultry droppings. Also new bacterial isolates were found on water samples examined after addition of poultry droppings in comparing with the results obtained before addition of poultry droppings. This includes salmonella sp., Which recorded at 40% of the examined samples while negative results recorded in the water samples examined before addition of poultry droppings.

Also higher percentages of pseudomonas and staph were recorded in water samples after adding of poultry viscera in comparing to the results of examination of water samples before addition of poultry viscera. At the same time new bacterial isolates were found in water samples examined of the addition of poultry viscera. This includes salmonella, shigella and campylobacter which recorded at 40%, 20% and 40% of examined samples with negative results recorded in the water samples examined before addition of poultry viscera

This indicate that the addition of poultry droppings and poultry viscera affecting drastically the bacteriological quality of water. These bacteria may be pathogenic to fish inducing diseases, or saprophytic opportunistic bacteria, waiting for any stress factor affecting fish, to take the upper hand and inducing diseases. So the attempts in a worldwide sense are focused on maintain water quality on ponds to support the growth of aquatic organisms.

Table 1 (Average results of examination of water samples before and after adding of poultry droppings).

Water parameter	Average results before adding of poultry droppings	Average results after adding of poultry droppings
pH	7.2	7.8
Unionized ammonia	0.16	1.1
Ionized ammonia	5.84	7.2
Dissolved oxygen	8.3	5.2

Table 2 (Average results of examination of water samples before and after adding of poultry viscera):

Water parameter	Average results before adding of poultry viscera	Average results after adding of poultry viscera
pH	7.4	7.3
Unionized ammonia	0.07	0.1
Ionized ammonia	6.4	6.4
Dissolved oxygen	6.8	6

Table 3 (Average results of bacteriological examination of water samples before and after adding of poultry droppings):

Type of bacteria	Water before adding of poultry droppings		Water after adding of poultry droppings	
	No. of positive samples	Percentage of positive samples	No. of positive samples	Percentage of positive samples
Aeromonas	6	60%	6	60%
Pseudomonas	4	40%	4	40%
Salmonella	0	0%	4	40%
Staph	1	10%	2	20%
Shigella sp.	2	20%	4	40%
Campylobacter	1	10%	3	30%

Table 4 (Average results of bacteriological examinatio· of water samples before and after adding of poultry viscera):

Type of bacteria	Water before adding of poultry viscera		Water after adding of poultry viscera	
	No. of positive samples	Percentage of positive samples	No. of positive samples	Percentage of positive samples
Aeromonas	4	40%	4	40%
Pseudomonas	3	30%	5	50%
Salmonella	0	0%	4	40%
Staph	2	20%	4	40%
Shigella sp.	0	0%	2	20%
Campylobacter	0	0%	4	40%

2- Results of Determination of the effects of the use of poultry droppings and poultry viscera on the health condition of cultured tilapia and catfish (*Clarias lazera).*

The results showed that the addition of poultry droppings affecting drastically the health condition of cultured tilapia, mortalities were recorded after each meal of poultry droppings which varied in number from few fishes to hundred of fishes The died fish varies in number from few fishes to hundreds of fish. The results of examination of tilapia fish fed regularly on poultry droppings showing that many died fish showing normal appearance, some fish died with septicaemic picture, some fish with eroded fins and gills, at the same time, the majority of fish showing signs of asphyxia after addition of poultry droppings like accumulation near the water inlet, surfacing and gasping of air. The signs of asphyxia disappear after introduction of new water to the ponds received poultry droppings. The signs of asphyxia may attributed to the effects of poultry droppings on water parameters, which associated with low dissolved oxygen, high ammonia and high pH. Also eroded fins and gills may be due to the different bacterial pathogens which either enter to the water with the poultry droppings to add new bacterial pathogens or increase the bacterial content of already present bacteria. The stress associated with the use of poultry droppings, including change of water parameter as well as introduction of many bacterial pathogens, may resulting in rapid death of such fishes.

The internal examination of died tilapia fish after use of poultry droppings showed engorged stomach & intestine with residues of poultry droppings.

No mortalities or abnormal signs were recorded in ponds of catfish fed on poultry droppings or poultry viscera. the external and internal examination of fish reveled normal.

The results of bacteriological examination of muscles of 20 tilapia fish fed on poultry droppings (table 5) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp. and shigella sp., at percentages 5%, 20%, 10% and 5% of the examined samples respectively with negative results for the presence of staph and campylopacter. While the examination of muscles of control tilapia fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., at percentage 5%, and 10% respectively with negative results for the present of salmonella, staph, Sheila and campylopacter.

The results of bacteriological examination of kidney samples of 20 tilapia fish fed on poultry droppings (table5) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp. shigella sp., And campylopacter at percentage 10%, .25%, 10%, 15% and 5% of the examined samples respectively with negative results for the presence of staph isolates. While the examination of kidney of control tilapia fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., Shiga and campylopacter at percentage 15%, 10%, 5% and 5% respectively with negative results for the present of salmonella, and staph isolates.

The results of bacteriological examination of intestinal smears of 20 tilapia fish fed on poultry droppings (table 5) revealed the presence of aeromonas sp., pseudomonas sp., salmonella sp., staph, Shigella sp., and campylobacter 10%, 15%, 20%, 10%, 10% and 15% of the examined samples respectively While the examination of control tilapia fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., and salmonella, at percentage 10%, 10% and 5% respectively with negative results for the presence of staph, Shigella and campylopacter.

The results of bacteriological examination of muscles of 20 catfish fed on poultry droppings (table 6) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp., staph, shigella sp., and campylobacter at percentages 5%, 5%, 10% 5%, 20% and 20% of the examined samples respectively with negative results for the presence of staph and campylopacter. While the examination of muscles of control fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., staph, and Shigella sp., at percentages 10%, 5%, 5% and 10% respectively with negative results for the presence of salmonella, and campylopacter.

The results of bacteriological examination of kidney samples of 20 catfish fed on poultry droppings (table 6) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp., shigella sp., and campylobacter at percentages 15%, 10%, 15% 45%, and 25% of the examined samples respectively with negative results for the presence of staph isolates . While the examination of control fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., shigella sp. And campylobacter at percentages 5%, 10%, 20% and 15% respectively with negative results for the present of salmonella, and staph.

The results of bacteriological examination of intestinal smears of 20 catfish fed on poultry droppings (table 6) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp. shigella sp. And campylobacter at percentages 15%, 10%, 10%, 25% and 20% of the examined samples respectively with negative results for the presence of staph isolates. While the examination of intestinal smears of control fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., Shigella and campylopacter at percentages 20%, 10%, 15% and 10% respectively with negative results for the present of salmonella, and staph isolates.

The results of bacteriological examination of muscles of 20 catfish fed on poultry viscera (table 7) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp., staph, shigella sp., and campylobacter at percentages 20%, 15%, 10% 10%, 5% and 10% of the examined samples respectively. While the examination of muscles of control fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., staph, and Shigella sp., at percentages 15%, 5%, 10% and 5% respectively with negative results for the presence of salmonella, and campylopacter.

The results of bacteriological examination of kidney samples of 20 catfish fed on poultry viscera (table 7) revealed the presence of aeromonas sp , pseudomonas sp., salmmonela sp., shigella sp., and campylobacter at percentages 25%, 10%, 45% 10%, 15% and 10% of the examined samples respectively. While the examination of control fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., staph, shigella sp. And campylobacter at percentages 15%, 10%, 5%, 5% and 5% respectively with negative results for the presence of salmonella.

The results of bacteriological examination of intestinal smears of 20 catfish fed on poultry viscera (table 7) revealed the presence of aeromonas sp., pseudomonas sp., salmmonela sp., staph, shigella sp And campylobacter at percentages 20%, 20%, 30%, 5%, 15% and 10% of the examined samples respectively. While the examination of intestinal

smears of control fish fed on pilleted ration revealed the presence of aeromonas sp., pseudomonas sp., staph, Shigella and campylopacter at percentages 20%, 10%, 5%, 5% and 5% respectively with negative results for the presence of salmonella.

The analysis of the results revealed that higher percentages of pseudomonas was recorded in fish muscles of tilapia fish fed on poultry droppings in comparing to the control fish. At the same time salmonella and Shigella isolates were detected on muscles samples of cat fish fed on poultry droppings while no isolates of such bacteria were detected on the control fish. Also higher percentages of pseudomonas and Shigella were detected in kidney samples of tilapia fish fed on poultry droppings than the control fish, at the same time salmonella isolates was detected at percentages 10% and no isolates was detected on the control fish.

The examination of intestinal smears revealed the presence of pseudomonas and salmonella isolates at higher percentages, also isolates of staph, Shigella and campylobacter were detected on intestinal smears of tilapia fish fed on poultry droppings and no isolates of such bacteria were detected in the control fish.

Also the results revealed that higher percentage of Shigella and campylobacter were recorded in muscles of catfish fed on poultry droppings in comparing to the control fish. Also salmonella sp. was isolated at percentages 10% of the examined samples of catfish fed on poultry droppings and no isolates of such bacteria was detected on the control fish. The results of examination of intestinal smears revealed the presence of higher percentage of Shigella and campylopacter in catfish fed on poultry droppings in comparing to the control fish. Also isolates of salmonella at percentage 10% was detected in the intestinal smears of catfish fed on poultry droppings and no isolates was detected in the control fish

The results of examination of muscle samples of catfish fed on poultry viscera revealed the presence of aeromonas and psodumonas isolates at higher percentages than the control fish, also isolates of salmonella and campylobacter were detected in muscles of cat fish fed on poultry viscera and no isolates of such bacteria were detected in the control fish. Also higher percentages of aeromonas, staph, Shigella and campylobacter were detected on kidney samples of catfish fed on poultry viscera than the control fish and isolates of salmonella at percentage 45% of the examined samples was detected in catfish fed on poultry viscera and no isolates of such bacteria was detected in the control fish.

The examination of the intestinal smears of catfish fed on poultry viscera revealed the presence of pseudomonas, Shigella and campylobacter at higher percentages than the control fish. Also salmonella was detected at percentage 30% of the examined catfish fed on poultry viscera and no isolates of salmonella was detected in the control fish.

The obtained results could be of great public health significance for human consuming such fish, because presence of members of the enterobacteriacae group (salmonella sp., and Shigella sp.) in muscles of tilapia fish fed on poultry droppings Also presence of salmonella, Shigella and campylobacter in muscles of cat fish fed on poultry droppings and poultry viscera are of public health significance and may inducing food poisoning *(Edwards and Ewings 1972, Banwart 1979, Collins 1984, Mousa and Mahmoud 1997, Heinitz et al 2000 and Maria-Nieves et al 2001).*

Also the presence of such bacteria in muscles, kidney and intestine of examined fish not agree with the data reported by *(Jay 1986, and Hayes 1992)*, that the flesh of newly caught fish generally accepted to be sterile but bacteria were found in variable numbers in three sites on the fish including slime coat on the skin, gills and intestine. So the fish produced in ponds fertilized by domestic animal wastes, could conceivably be marketed for human consumption if it could be demonstrated that there are no pathogenic organisms associated with the production, as a means of assuring a sanitary product and also to reduce the aesthetic stigma surrounding such product.

(Table 5)Results of Bacteriological examination of tilapia fish before and after addition of poultry droppings:

Type of bacteria	Fish muscle				Kidney				Intestine			
	*		**		*		**		*		**	
	A	B	A	B	A	B	A	B	A	B	A	B
Aeromonas	1	5%	1	5%	3	15%	2	10%	2	10%	2	10%
Pseudomonas	2	10%	4	20%	2	10%	5	25%	2	10%	3	15%
Salmonella	0	0%	2	10%	0	0%	2	10%	1	5%	4	20%
Staph	0	0%	0	0%	0	0%	0	0%	0	0%	2	10%
Shigella	0	0%	1	5%	1	5%	3	15%	0	0%	2	10%
Campylobacter	0	0%	0	0%	1	5%	1	5%	0	0%	3	15%

***Examined samples before adding of poultry droppings.**
**** Examined samples after adding of poultry droppings**
A number of positive samples.
B percentage of positive samples.

(Table 6)Results of Bacteriological examination of catfish samples before and after addition of poultry droppings:

Type of bacteria	Fish muscle				Kidney				Intestine			
	*		**		*		**		*		**	
	A	B	A	B	A	B	A	B	A	B	A	B
Aeromonas	2	10%	1	5%	1	5%	3	15%	4	20%	3	15%
Pseudomonas	1	5%	1	5%	2	10%	2	10%	2	10%	2	10%
Salmonella	0	0%	2	10%	0	0%	3	15%	0	0%	2	10%
staph	1	5%	1	5%	0	0%	0	0%	0	0%	0	0%
Shigella	2	10%	4	20%	4	20%	9	45%	3	15%	5	25%
Campylobacter	0	0%	4	20%	3	15%	5	25%	2	10%	4	20%

(Table 7)Results of Bacteriological examination of catfish samples before and after addition of poultry viscera:

Type of bacteria	Fish muscle				Kidney				Intestine			
	*		**		*		**		*		**	
	A	B	A	B	A	B	A	B	A	B	A	B
Aeromonas	3	15%	4	20%	3	15%	5	25%	4	20%	4	20%
Pseudomonas	1	5%	3	15%	2	10%	2	10%	2	10%	4	20%
Salmonella	0	0%	2	10%	0	0%	9	45%	0	0%	6	30%
staph	2	10%	2	10%	1	5%	2	10%	1	5%	1	5%
Shigella	1	5%	1	5%	1	5%	3	15%	1	5%	3	15%
Campylobacter	0	0%	2	10%	1	5%	2	10%	1	5%	2	10%

3- Results of bacteriological examination of samples of poultry droppings and poultry viscera

The bacteriological examination of 20 samples 10 of poultry droppings and 10 of poultry viscera (tables 8&9) revealed the presence of aeromonas sp., pseudomonas sp., salmonella, staph, shigella sp. and Campylobacter sp., at percentages 5%, 15%, 15%, 5%, 10%, and 10% of the examined samples respectively in the examined samples of poultry droppings and at percentages 0%, 10%, 15%, 10%, 20% and 5% in the examined samples of poultry viscera. The results indicated that the use of poultry droppings and poultry viscera could be a serious source for many bacterial pathogens, some of them are pathogenic to fish like aeromonas sp. and pseudomonas sp., may inducing diseases and mortalities, others like the members of enterobacteriacae may transmitted through fish to humans inducing diseases and food poisoning, which considered of great public health significance.

Table (8) results of examinations of sam les of poultry droppings

Type of bacteria	No. of positive samples	Percentage of positive samples
Aeromonas	1	10%
Pseudomonas	3	30%
Salmonella	3	30%
staph	1	10%
Shigella	2	20%
Campylobacter	2	20%

Table (9) results of examinations of samples of poultry viscera

Type of bacteria	No. of positive samples	Percentage of positive samples
Aeromonas	0	0%
Pseudomonas	2	20%
Salmonella	3	30%
staph	2	20%
Shigella	4	40%
Campylobacter	1	10%

From this study, it could be concluded that the use of poultry droppings as a feed for tilapia, also the use of poultry droppings and poultry viscera as feeds for cultured catfish *(clarias lazera)* should be prohibited because they have a great drawbacks including distasteful effect on the water parameters on using of poultry droppings by inducing depletion of dissolved oxygen in water, raising the levels of unionized ammonia, inducing a great stress on fish making fish vulnerable to diseases. At the same time, the use of poultry droppings and poultry viscera add many pathogens to water, some of them may induce diseases and mortalities to fish, others are zoonotic bacteria may transmitted through fish to humans inducing diseases and even food poisoning which considered of great public health significance.

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