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EVALUATION OF HEALTH STATUS OF STRAY CATS HOMED AS PETS TO SOME VIRAL AND PROTOZOAL FELINE DISEASES

(With 7 Tables)

By

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تقييم الحالة الصحية للقطط الضالة التي تستخدم كحيوانات منزلية لبعض الأمراض الفيروسية والبروتووزوا

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في هذه الدراسة تم استقبال ٢٢٤قطة ضالة للفحص والرعاية الطبية منهم خمسون قطة مريضة يعانون من هزال ونقص الوزن وأنيميا وإسهال والتهاب في الفم. القطط الباقية وعددهم ١٧٤ قطط سليمة لا تعانى من شئ تم استقبالهم للفحص والتحصين ضد أمراض القطط ، ١٢٥ قطة عبارة عن قطط ضالة تم اصطيادهم بواسطة الأجانب للتربية في المنازل و٩٩ قطة من القطط المدللة القادمة من الخارج مع أصحابها. جميع هذه القطط تم فحصهم لبعض الأمراض الفيروسية التي تصيب القطط عن طريق الكشف عن الأجسام المناعية مثل لوكيميا القطط والتهاب البرتون المعدي للقطط ومرض نقص المناعة المكتسبة والقطط ومرض البانليكوبنيا والتوكسوبلازما في القطط الضالة. أوضحت التجارب انتشار مرض التهاب البرتون المعدي في القطط الضالة المريضة بنسبة ١٨,٧% بينما تم اكتشاف الأجسام المناعية لهذا المرض في القطط السليمة بنسبة ٩,٨% وكذلك أثبتت التجارب أن مرض لوكيميا القطط منتشر بين القطط المريضة بنسبة ٨% وقد لوحظ وجود ثلاث قطط فقط من القطط المدللة القادمة من الخارج مع أصحابها بها أجسام مناعية في مصلها ضد مرض نقص المناعة المكتسبة في القطط بنسبة ١,٣% من اجمالى عدد القطط المفحوصة. اثبتت التجارب أيضا وجود الأجسام المناعية لمرض التوكسوبلازما والبانليكوبنيا في القطط بنسبة ٨,٠٣% و٣,١٢% على التوالي. أيضا في هذا البحث تم الربط بين أنواع القطط الضالة المختلفة والعمر والجنس مع الإصابة بهذه الأمراض كما تم دراسة تداخل الأمراض مع بعضها واحتمال إصابة القطة الواحدة بأكثر من مرض من هذه الأمراض .

SUMMARY

A total of 224 stray cats were admitted to private, Veterinary clinic for check up and medical care. Fifty cats were diseased and suffering from emaciation, weight loss, anaemia, diarrhea and/or gingivitis. The other 174 cats, were apparantely healthy admitted for check up and designation of vaccination programmas. 125 out of 224 were balady stray cats collected by foreigner mens and womens for homing as a pets the other 99 cats were feral cats. All cats were examined for the prevalence of feline leukemia antigenemia (FeLV), feline infectious peritonitis (FIP) virus, feline immunodeficiency virus (FIV), feline panleukopinea (FPL) virus and Toxoplasmosis. FIP antibodies were detected in 18.7% of cat populations with the highest prevalence in balady stray cats. FIP antibodies were detected in 9.8% of apparentely healthy cats. FeLv antigen were detected in 8% of diseased cats. Only three diseased cats of foreign breeds were showed seropositive to FIV with incidence rate of 1.3% Toxoplasmosis and FPL antibodies were also screened with a percentage of 8.03% and 3.12%, respectively. Correlation of species, age, sex and infection of cats with feline viruses were studied. Additionally coinfection of cats with more than one feline virus wer also studied.

Key words: *Cats, Feline diseases, Zoonoses.*

INTRODUCTION

Feline corona virus (FIP), Feline leukemia virus (FeLV), Feline panleukopinea virus (FPL), Feline immuno dificiency virus (FIV) and Toxoplasmosis are among 5 of the most important viral and protozoal pathogens of cats. Felv and FIV both induce an immuno-suppression that leads to the development of secondary infection by opportunistic microrganisms, haemopoetic tumors and anaemia caused by retrovirus (Coltor, 1998 and Sellon. 1998). Feline panleukopinea virus is one members of parvovirus infect all members of family felidae (Murphy *et al.*, 1999) characterized by leukopinea, bloody diarrhea and dehydration. All white blood cell elements and platelets were decreased. Kittens develop cerebellar hypoplosia. Feline corona virus may cause enteritis and upper respiratory tract disease and in small percentage of infection may progress to fatal feline infections peritonitis (Addie and Jarret, 1998). Toxoplasmosis disease is one of the most important zoonotic diseases transmitted from cats to human causing abortion and intrauterine fetal death in pregnant women. (Dubey and Beattie, 1988).

Generally, there is no evidence that feline viruses can infect humans but in many places, women of child bearing age, children and immunocomprimized persons have been advised that they should avoid close contract with cats showing sings of diseases (Murphy *et al.*, 1999).

Due to worldwide distribution of these feline viruses, zoonotic importance of feline infections, susceptibility of more than 18 different feline species to feline virus and recently discovered feline immunodeficiency virus which its epidemiology and pathogenicity are poorly understood and its linking with human immunodeficency virus which direct causility has not been proved. For all these reasons, the present work was planned to evaluate the health status of balady stray and feral cats to some feline virus infections and toxoplasmosis, consequently could provide the basis for eradication and to design a vaccination schedule for stray cats which catched and homed as a pet in addition to explore possible association between infection, signalment, clinical sings and coinfection among different feline viruses and toxo plasmosis. (Feral cats, Cats that returned back to the wild state after having been domesticated).

MATERIALS and METHODS

Blood samples:

Blood samples were collected by Jugular or cephalic veinpuncture into heparinized tubes. Whole blood sanples were used for detection of viral antigen and haematological investigation as total, differential WBCs cont and platelets counts. Plasma was separated by centrifugation at 100 xg for 10 minutes and stroed at-20°C untile used for serological investigation.

Cats:

A 224 of cats were admited to private clinic in Riyadh, K.S.A for check up and evaluation of healthy status. The cats sampled were classified into two groups. The first group is balady stray cats which were catched and collected by forighner mens and womens for homing as pets (125), the second group were feral cats which are mostly foreign breeds (99). Age, sex, species and presence of clinical sings of disease were recorded in Table (1). Age of cats were determined from patients records and /or dental examination.

Haematological investigation:

Clinical and haematological examination for diseased cats were performed . Haematological examination included complete blood count

(RBCs, total and differential WBCs count, haemoglobin, PCV and platelets count) were performed according to the method described by Jain, (1986).

Diagnostic tests:

Serological examination of cats for detection of antibodies to feline infectious peritonitis virus and feline immunodeficency virus were performed using ELISA techniques (Gruffydd *et al.*, 1988 and Baneth *et al.*, 1999). A commercial enzyme linked immunosorbent assay (ELISA) test kits (Pet check RIP and FIV test kets IDEXX laboratories, U.S.A) was used. The procedures were performed according to manifactures instructions. Feline leukemia viral antigen was detected using EISA test kits and subsequently confirmed by indirect immunoflourscence (IFA) test (Addie *et al.*, 1998 and Lewis *et al.*, 1987). ELISA and IFA test kits were used for detection of Fel-v. antigen in plasma and blood smears on glass slides (Pet check Fel.v test kit, IDEXX laboratories, U.A.A).

Anti-feline panleukopinea virus and Toxoplasmosis antibodies were detected using ELISA test kits either for detection of anti FPL, IgG or IgM. and anti-toxoplasmosis IgG or IgM in serum samples of cats to evaluate the presence of specific IgM which may be diagnostic in recent and primary infection (Edwin and Smith, 1999).

RESULTS

A total of 224 cats were included in this study of which (55.8%) were balady stray cats catched to be homed as pets, (44.2%) were foreign. Feral domestic breeds. 174 cats are apparently healthy admited for evaluation of healthy status and designation a vaccination programmes and 50 cats were diseased admited for medical care. The clinical sings observed on physical examination were nasal discharge found in 20 cats, mouth inflommation, gingivitis, emaciation and skin lesions were found in 14 cats. The clinical sings were analyzed for association with other paremeters. Correlation between diseases and haematiological examination were shown in Tables (2,3,4,5).

In a total, FeLV antigen was detected in plasma samples from 2.6% of cats, 33% were seropoitive to toxoplasmosis and 33% seropositive for FIP. No cats were coinfected with FeLv and FIV or FPL virus.

The highest incidence was observed in FIP infection (42/224) with a percentage rate 18.7%. Balady stray cats were higher incidence than other breeds (30/125). FIP antibodies were observed in apparently

healthy cats with a percentage rate 12.6% - 40% of diseased cats were seropositive to FIP. 19% of diseased cats were coinfected with FIP and toxoplasmosis. There is a correlation between FIP and age. 19% of seropositive cats to FIP were less than 6 months age in comparison with age more than 6 month (18%). FIP antibodies was higher in balady stray cats with percentage rate 24% in comparison with DSH, DLH, Siamese, Chinchilla, Persian and Abyssinian with a percentage rate of 11%, 14%, 9%, 14%, 13% and 12.5%, respectively. The presence of FIP antibodies was strongly associated with nasal discharge . FPL antibodies were recorded in serum of apparently healthy stray cats with percentage rate of 2.3%. Seropositive cats for FPL antibodies are strongly coinfected with toxoplasmosis and feline leukemia antigen with coinfection rate of 14.3% and 14.3% respectively. There is no FPL seropositive cats coinfected with FIP, FIV or FPL (Table 1).

As shown in Table (2), incidence of FIV antibodies was high in male cats (2.1%) than female cats (0.7%). Regarding to age, FIV antibodies were high in cats over 6 months age with percentage rate 6.8%, while there is no antibodies in cats less than 6 months. The highest incidence of FIV was shown in domestic short hair cats (11.1%), while the lowest incidence of FIV was shown in Persian cats (4.3%). There is no FIV antibodies shown in Balady stray cats, domestic long hair cats, Chinchille and Abyssinian cats. Antibodies aganist FIV were observed only in 6% of diseased cats, while apparentely healthy cats are completely free of FIV antibodies. FIV seropositive were strongly associated with the prevalence of FIP, with coinfection rate of 33.3%.

In a total, FPL antibodies were detected in serum samples from 31.5% of the cats, 3.2% of seropositive were observed in male cats, while 3.1% in femal cats. Regarding to age group, the highest incidence were observed in cats more than 6 months age while 2.2% incidence rate in cats less than 6 months old age. In Chinchilla cats, FPL antibodies prevalence were high 14.3%, while the lowest incidence were observed in Balady stray cats (2-4%). There is no FPL antibodies were observed in domestic short and long hair cats.

Concerning to detection of toxoplasmosis antibodies in serum of cats as shown in Table (1), Female cats were high than male with incidence rate of 9.4% and 6.4%, respectively. The highest incidence of toxoplasmosis antibodies was observed in Balady stray cats (12%), while lowest incidence was observed in Abssyssinian (4.2%). Toxoplasmosis antibodies were not observed in Siamese, Chinchilla and domestic short hair cats. Regarding to coinfection of toxoplasmosis with

other viral agents, It was shown that toxoplasmosis antibodies were observed in cats coinfected with FeL.v, FIV and FPL with coinfection rate 11.1%, 5.5% and 5.5%, respectively.

The correlation among sex, age, species, healthy status and coinfection to FeLV, FIP, FIV, FPL and toxoplasmosis infections were illustrated in Table (1).

Table 1: Age, sex, species and healthy status of examined cats.

Cat Species	Healthy cats				Diseased cats				Total
	Age		Sex		Age		Sex		
	> 6 month	< 6 month	♂	♀	> 6 month	< 6 month	♂	♀	
Balady stray cats	13	85	39	59	9	18	13	14	125
Fercal cats	16	60	31	45	8	15	13	10	99
a)DSH*	1	5	2	4	1	2	2	1	9
b) DLH**	6	5	4	7	2	1	2	1	14
c) Siamese	0	19	6	13	1	2	1	2	22
d) Chimchilla	0	3	1	2	1	3	2	2	7
e) Persian	2	18	4	16	1	3	2	1	23
f) Abyssian	7	10	14	3	3	4	4	3	24

* DSH = Domestic short hair cat. ** DLH = Domestic long hair cat .

Table 2: Prevalence of Feline viruses and Toxoplasmosis among different cat groups.

	Fel v. Ag		FIP Ab		FIV Ab		FPL Ab		Toxoplasmosis Ab	
	No.	%	No.	%	No.	%	No.	%	No.	%
Sex										
♂	1/96	1.04	16/94	17	2/94	2.1	3/94	3.2	6/94	6.4
♀	5/128	3.9	26/128	20.03	1/123	0.7	4/128	3.1	12/128	9.4
Age group										
> 6 month	0/46	0.0	8/44	18.2	3/44	6.8	3/44	6.8	5/44	11.4
< 6 month	6/178	3.3	34/178	19.1	0/178	0.0	4/178	2.2	13/178	7.3
Species										
Balady stray	2/125	1.6	30/125	24	0/125	0.0	3/125	2.4	15/125	12
DSH	0/9	0	1/9	11	1/9	11.1	0/9	0.0	0/9	0.0
DLH	1/14	7.1	2/14	14.3	0/14	0.0	0/14	0.0	1/14	7.1
Siamese	1/22	4.5	2/22	9.09	1/22	45	1/22	4.5	0/22	0.0
Chinchilla	0/7	0	1/7	14.3	0/7	0.0	1/7	14.3	0/7	0.0
Persian	1/23	4.3	3/23	13.04	1/23	4.3	1/23	4.3	1/23	4.3
Abyssinian	1/24	4.1	3/24	12.5	0/24	0.0	1/24	4.2	1/24	4.2
Helthy status										
Apparently healthy	0/174	0.0	22/174	12.6	0/174	0.0	4/174	2.3	14/174	8.04
Diseased	6/50	12	20/50	40	3/50	6	3/50	6	4/50	8
Mixed infection										
Toxoplasmosis	2/6	33.3	8/42	19.04	0/3	0.0	1/7	14.3	--	--
Fel. V.	--	--	1/42	2.4	0/3	0.0	1/7	14.3	2/18	11.1
FIP	2/6	33.3	--	--	1/3	33.3	0/7	0.0	0/18	0.0
FIV	0/6	0.0	1/42	2.4	--	--	0/7	0.0	1/18	5.5
FPL	0/6	0.0	1/42	2.4	0/3	0.0	--	--	1/18	5.5

Fel V.= Feline leukemia vinus , Ag = antigen. FIP = Feline infections pentonitis virus, Ab = antibody
FIV = Feline immuno deficiency virus. FPL = Feline panleukopivera virus .

Table 3: Detection of Feline leukemia viral antigen by IFA and ELISA test.

Species& sex	Age	Clinical sings	ELISA	IFA
Balady stray (♂)	1M	Weight loss – anaemia – leukemia	+	+ve
DLH (♀)	2M	Gingivitis – diarrhea – weight loss	+	+ve
Siamese (♀)	2M	S/C abscess–emaciation–rhimnitis	+	-ve
Persian (♀)	4M	Anaemia + granulocytopenia	+	+ve
Balady stray (♀)	3M	Lymphasarcoma in skin	+	-
Abyssian (♀)	3W	Diarrhea – emacration – stomatitis – Weight loss	+	+ve

Table 4: Incidence of FIP antibodies in Balady sray cats and foreign breed cats.

Health status	No	Age		Sex		ELISA Mean titre	Clinical singd
		>6M	<6M	♂	♀		
Apparently healthy balady	16	3	13	9	7	1 : 200	---
Diseared balady stray	14	3	11	4	10	1 : 800	weight loss – anaemia – ascitis – fever-chronic diarrhea
Apparently healthy foreign breed cats	6	1	5	2	4	1 : 400	---
Diseared foreign breed cats	6	1	5	1	5	1 : 400	Fever – emaciation – chronic Respiratory signs – leukopinea– anaemia

* Titer less than 1 : 200 is non significant.

Table 5: Clinical and hematological findings of FIP seropositive foreign breed cats.

Species/No	Age	Hb%	Clinical sings
DLH (2)	6 month	8.4 g/dl	
DSH (1)	2 year	8 g/dl	Dyspnea – rhinitis with thoracic fluid accumulation
Siamese (2)	18month	9 g/dl	Weight loss – stomatitis – vomiting – diarrea
Perslan (2)	18 month	7.6 g/dl	Anaemia – weight loss – stomatitis
Chinchilla (1)	18 month	9.5 g/dl	Ascitis – emaciation – vomiting
Absynian (2)	4 month	8.4 g/dl	Diarrhea – weight loss – dehydration
Baladystray(10)	5 month	8.2 g/dl	Diarrhea – weight loss – emaciation

Table 6: Evaluation of health status of stray and feral Cats (7) to FPL viruses through detection of IgG and IgM in seum samples .

Species	Age	Sex	FPL antibodies		Clinical sings and protection state
			IgG	IgM	
Balady stray	6M	♀	1 : 160	< 1 : 10*	No infection good protection.
Balady stray	1M	♂	1 : 640	< 1 : 10	No infection good protection.
Balady stray	2M	♀	1 : 640	< 1 : 10	No infection good protection.
Siamese	6M	♂	< 1 : 10	< 1 : 10	No infection no protection.
Chin chilla	1M	♂	1 : 640	1 : 10	Leukopinea
Persian	2M	♀	1 : 640	1 : 10	Leukopinea + Thrompactytop
Abyssinian	6M	♀	1: 320	1 : 10	Leukopinea + Thrompactytop

< 1 : 10 Low IgM titre indicates no infection .
1 : 10 High IgM titre indicates infection .

Table 7: Evaluation of health status of stray and feral Cats (18) sero positive to toxoplasmosis through detection of IgG and IgM.

Species	Age		Sex		Toxoplasmosis Ab.			
	< 10 month	> 6 month	♂	♀	IgG mean ELISA titre	IgM Mean ELISA titre	Results of samples examined for cyst examination +ve	-ve
Balady stray	12	3	4	11	3.7*	3	11	4
DLH	1	0	1	0	4	0	1	0
Persian	0	1	1	0	5	0	1	0
Abyssinian	0	1	0	1	3.8	0	1	0

* Normal value of toxoplasmosis IgG & IgM

0.00 - 0.99	Negative
1.48 - -2.49	low positive
> 4.6	high positive

DISCUSSION

Clinical diagnosis of feline leukemia infection is based on clinical sings and laboratory results (Pettan *et al.*, 1992). Two techniques were used to evaluate Fel.v status using serum, the FeLV IFA (indirect flourscent antibody test and FeLV ELISA (enzyme linked immunosorbent assay). 6 samples out of 222 total serum samples were positive to FeLV. antigen in serum with an incidence rate (2.7%). ELISA test can detect pre-viremic stage of infection (detect group specific antigen in serum). It should be confirmed by IFA where revealed only 5 serum samples positive to FeLv out of 7 serum samples positive with ELISA. Positive IFA samples indicates active viremia (detect group specific antigen within the viral core) and performed on blood swears on glass slides as Pettan et. al, 1992 and Murphy *et al.*,

1999). Variation in clinical sings of FeLV infection in cats as shown in Table (3) due to nature of virus which produce a varicty of disease syndromes, some neoplastic and some non neoplastic with others relating to effects on hematopositic cell, the immune systems and other immunopathologic syndrome (Murphy *et al.*, 1999). The highest incidence of FeLV antigen was observed in domestic feral long hair cats concurrentlely coinfected with Toxoplasma and Feline infectious peritonitis virus (Corona Virus), simillar results obtained by Petten *et al.*, 1992, Bennett *et al.*, 1989 and Gruffydd *et al.*, 1988 whose stated that in domestic cats concurrent infection of Feline leukemia virus with Feline infectious peritonitis virus, Toxoplasma gondi and/or Feline immunodeficeincy virus may occur. FeLV and/or FIV infection and related immunosuppressions are not distinguishable clinically, although the 2 viruses are distinct morphologically and antigenically.

The prevalences of FIP antibodies in cats are much higher (18.9%), while FeLV antigenia is rarer and found in only 2.7% of tested samples, similar results are obtained by Baneth *et al.* (1999) in Israel and Deeb and Sufan (1986) in Lebanon but slightly differ with Lutz *et al.*, 1990, Braley 1994, Hosie *et al.*, 1989 and Ueland and Lutz, 1992 in Switzerland, U.S.A, United Kingdom, and Norway, respectively. The reasons why a low incidence of FeLV is found in some geographic locations are unknown. The difference in prevalence of FeLV in surveys from various countries may be accounted for several possible exaplanations including: genetic resistance to infection in some populations or breeds, the effect of climatic conditions on transmission of the virus, behavioural difference among cats in different areas affecting disease transmission and the presence of less virulent viral strains that successfully establish an infection in smaller percentage of exposed cats.

Feline infectious peritonitis is arcyrably the most enigamatic Corona virus disease of all. Its pathogenesis involves immunopathologic mechanism as antibody- dependent enhancement of infection and immune complex induced lesions. The incidence of feline peritonitis virus (18.9%) in total cat populations in this study were higher. Seroprevalence of FIP in diseased cats showed clinical sings were 40%, while in apparentaly healthy cats were 12.6%. There findings support the hypothesis made earlier by Pederson *et al.* (1981) that FIP virus arises from spontaneous mutations in some of the cats infected with feline enteric corona virus. A longitudinal study from Britian revealed that about 5-10% of cats seropositive for feline corona virus will develop

fatal feline infectious peritonitis (Addie *et al.*, 1995). These fundings explains why FIP antibodies are present in apparentely healthy cats.

Seropositivity to FIP are strongly associated with young age cats less than 6 months age with a rate of 15.3% of total cat population recorded in this study, these findings are coincided with that obtained by Baneth *et al.*, 1999 who reported that FIP seropositivity to be highly prevalent in young cats living in catteries. Among different species of cats showing FIP antibodies, it is clear from result illustrated in Table (2) that FIP antibodies were prevalent in balady stray cats followed by feral domestic long hair cat, chinchilla, persian, Abyssinian, domestic long hair and siamese with an incidence rate of 24%, 14.3% 14.3%, 13.03%, 12.5%, 11% and 9.09%, reopectively. These results are inagreement with Baneth *et al.*, 1999 and Pedersen, 1987, who recorded that the prevalence of FIP infection was highest among cats from animal shelters followed by feral cats and significantly less prevalent in client owned cats.

Concurrent coinfection of FIP virus with other infection as Toxoplasmosis, Feline leukemia virus, Feline immunodeficiency and Feline panleukopinea as shown in Table (2) were recorded and studied by other workers; Hosie, *et al.*, 1989, Lutz *et al.*, 1990, Ishida *et al.*, 1989 and Yamamoto *et al.*, 1989.

An important finding is that emerging of FIV in male cats aging from 6 months to 10 years old, are mainly due to FIV. virus sheds mainly in saliva and the principal mode of transmission is through bites (Murphy *et al.*, 1999). Becuase of this, free roaming (feral and pet), male and aged cats are at the greater risk of infection. The same results obtained by Gruffydd *et al.*, 1988. FIV antibodies were demonstrated in diseased cats (6%) suffering from emaciation, weight losses and anaemia. Other cat suffering from mouth lesions and gingivitis these result coincided with Bennet *et al.* (1989) who recorded that healthy cats admitted to hospital for medical care and chekup, none had detecTable antibody to FIV while cats suffering from chronic stomatitis/gingivitis showed high prevalence of FIV antibodies. It was suggested that FIV might be involved in the production of chronic diseases and including immunodeficency (Hosie *et al.*, 1989; Ueland and Leutz 1992, Malik *et al.*, 1997 and Ishida, 1989). The significant association between stomatits and gingivitis and FIV infection found in this study can be explaned by secondary infection of the oral cavity commenly found in immunosuppressed cats with FIV (Ishida *et al.*, 1989 and Yamamoto *et al.*, 1989).

No Significant association linking infection with toxoplasmosis, Feline leukemia virus, Feline infectious peritonitis and feline panleukopinea virus. Although this may be a result of the relatively small samples of cats included in the survey, the finding of no apparent epidemiologic relationship between FIV infection and other feline viruses are in agreement with those of Hosie *et al.*, 1989, Ishida *et al.*, 1989 and Yamamoto *et al.*, 1989 Additionally, Lutz *et al.*, 1990 compared FIP infection with FIV and FeLV in cats and showed no correlations. The reason for the lack of apparent relationship of FIP and FIV could be due to different routes of infection and typical environment in which transmission takes place . FIV transmitted mainly by bite wounds during aggressive behaviour, while FIP transmitted by exposure to excretions containing infective virus which occurrs intensively in catteries and multiple cat households

Concerning to feline panlenkopinea serosurvey in this study, it showed in Table (2) that, FPL antibodies were detected in serum of apparently healthy cats (2.3%) admitted for checkup while in 6% of diseased cats. Apparentely healthy cats seropositive to FPL were admited for specific FPL- IgM detection. Viral specific IgM detection using ELISA test (Herman and Erdman, 1992) are essentially the save as IgG antibodies detection except that IgM bound to viral antigen on solid phase is detecting using secondary antispecies IgM antibodies labelled with suiTable markers. IgM determination to specefec disease can made on the basis of a single acute phase serum because IgM antibodies appear early after infection and drop to low level within one month to two months. They are usually indicative of recent infection (Murphy *et al.*, 1999). Demonstration of a seroconversion from negative to positive IgG antibody response or detecting the presence of specific IgM can be diagnostic of primary viral infection (Edwin and Smith, 1999). So it is very important to detect IgM antibodies aganist FPL virus and Toxoplasma gondi to evaluate the health status of apparentely healthy cats showing positive titre aganist FPL virus and Toxoplasma gondi.

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