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STUDIES ON THE ROLE OFSTRAY DOGS AS CARRIERS FOR SOME BACTERIAL AND MYCOTIC PATHOGENES TO MAN AT BEHERA GOVERNORATE

(With 3 Tables)

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دراسات عن دور الكلاب الضالة كحاملات لبعض مسببات الأمراض البكتيرية والفطرية للانسان في محافظة البحيرة

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في هذه الدراسة تم جمع ١١٥ عينة براز من الكلاب الضالة من مختلف الأماكن في محافظة البحيرة ، وقد تم فحص هذه العينات بكتريريولوجيا وميكولوجيا لعزل بعض عترات من البكتريا المعوية والفطريات الممرضة ذات الخطورة على الصحة العامة · قد أسفرت هذه الدراسة عن عزل بعض البكتريا المعوية والتي أهمها الميكروب القولوني بنسبة ٥٥ر٧٪ ، البروتيس بنسبة ١٥ر٦٪ كذلك تم تصنيف عدد ١٤ عترة من الميكروب القولوني سيرولوجيا ، وفي نفس الوقت تم عزل ٣ عترات من الشيجلا فلكسينيري نوع (٦) والسالمونيلا تيفيميوريم والسالمونيلا أنتريديدس بنسبة ٩ر٢٪ ، ٦ر١٪ ، ٩٪ على التوالي أيضا تم عزل بعض من الفطريات مثل العفن بنسبة ١ر١٩٪ والخمائر بنسبة ٧ر١٪ وكذلك شبيهات الخمائر بنسبة ٢ر٥٪ · هذا وقد نوقشت الأهمية المشتركة لجميع العترات المعزولة ومدي تأثيرها على صحة الإنسان ·

SUMMARY

One hunderd and fifteen faecal samples were collected from stray dogs at various localities of Behera Governorate, particularly from Edfina, El-Mahmodia and Damanhour localities, as well as especially from those gaining access to human garbage. These samples were examined bacteriologically and mycologically for isolation some members of Enterobacteriaceae and pathogenic fungi of public health hazard. The most predominant bacterial isolates were E.coli (55.7%), Proteus spp. (15.6%), Enterobacter spp. (11.3%), Citrobacter freundi (6.9%) and Klebsiella pneumoniae (2.6%). The 14 pathogenic strains of E.coli recognized (21.9%) were differentiated serologically into the following O-serogroups: 02, 04, 06, 015, 011, 026 and 0101. At thesame time three important human pathogens: Shigella flexineri type 6, Sal. typhimurium and Sal. enteritidis were recovered

in an incidence of 0.9, 1.7 and 0.9% respectively. The results of mycological investigation revealed that the incidence of the isolates were Mould spp. (19.1%), Yeast spp. (1.7%) and Yeast-like organisms (5.2%). The zoonotic importance of these isolates was discussed.

INTRODUCTION

Stray dogs constitute one of the most important public health hazardous problems which may suffer from systemic or localized infection with some pathogenic bacteria and fungi. Besides being infected with various agents of zoonotic significance however, they may act as symptomless and excretors of many pathogenic microorganisms leading to severe human infections. A fact which is substantiated on the base of many available reports (REFAI & LOOT, 1969; HUBBERT & ROSEN, 1970; ROSEN, 1971; SMITH, 1971; MAREK et al., 1973; SIAM et al., 1973; BOARGOB, 1975; MORSE & DUNCAN, 1975 and TIMBS et al., 1975).

The aim of this investigation is to throw light on the role of stray dogs as carriers of certain human pathogens of family Enterobacteriaceae and some pathogenic fungi.

MATERIAL and METHODS

A total of 115 random faecal samples were obtained from apparently healthy stray dogs in different districts at Behera Governorate. All samples were collected aseptically and sent immediately to the laboratory for bacteriological and mycological examination.

The methods used for identification of Gram-negative isolates were carried out according to the schemes described by EDWARD'S and EWING (1972) and BUCHANAN & GIBBONS (1974). Serological typing of the isolated Salmonella, Shigella and pathogenic E.coli was induced by using the rapid slide agglutination test as described by EDWARD and EWING (1972). Polyvalent antisera against Salmonella serogroups were obtained from serotherapeutic institute, Fac. of Vet. Med., Vienna University.

Identification of the recovered moulds was carried out according to SAMSON (1979). While the isolated yeasts were identified according to LODDER (1971) and ARX et al. (1977).

RESULTS

The results are tabulated in Tables (1, 2 & 3).

DISCUSSION

The 64 E.coli existed in (55.7%) isolated in this work, were differentiated into 50 (78.1%) non-pathogenic and 14(21.9%) pathogenic E.coli serologically typed into

7 O-serogroups: 02, 04, 06, 011, 015, 026 and 0101 (Table 2). These findings are more or less coinside with that obtained by SOJKA (1965) and RENAULT et al. (1975). However, E.coli is known to be the major causative agent of diarrhea, uro-genital affection and haemorrhagic colitis in humans (ORSKOV et al., 1972; LOEWENSTEIN et al., 1973 and ABRAHAM et al., 1983) as well as gastroentritis in dogs (LING et al., 1979).

The recovery of the four species of Proteus (Table 1), Proteus vulgaris (7.8%) and Proteus mirabilis (5.2%) were the most predominant species. These findings support the results obtained by ABDEL-FATTAH (1977) who isolated the four species from the faeces of apparently healthy dogs. However, these organisms were recovered from cases of summer diarrhoea among infants and urinary tract infection (BANWART, 1981).

Shigella flexneri type 6 was isolated at an incidence of 0.9% (Table 1). These result was agreed with TIWARY and PRASAD (1972). However, infection with Shigella and Salmonella in stray dogs might be a result of their coprophagous habit. Regarding to public health importance dogs may act as a transient excretors of this organisms in highly endemic areas of human shigellosis in addition Shigella flexneri causing food borne gastroenteritis (BANWART, 1981).

Salmonella typhimurium and Sal. enteritidis were isolated at percentages of 1.7% and 0.9% respectively (Table 1). This result came in agreement with GOLEBIOWSKI (1975) who isoalted the organism from liver and faeces of one dog. However, both organisms are known members of humman food poisoning bacteria (EMARA et al., 1950).

Klebsiella pneumoniae was detected in 2.6% (Table 1). This organism is considered as pathogen and potentially pathogens in cases of acute pneumonia, bacteraemia, urinary tract and several other types of human infections in man (LIMSON et al., 1956 and BERGEY'S, 1984).

From the results tabulated in Table (3) it revealed that the predominant mould genera were Aspergillus niger (7.8%) followed by A. flavus (5.2%), A. fumigatus (1.7%) and Mucor spp. (4.4%). Aspergillus spp. have been incriminated as causative agents in many human mycotic infections especially broncho-pulmonary aspergillosis (JORDAN et al., 1971).

As illustrated in Table (3), the incidence of Candida albicans was (3.5%) followed by C. tropicalis (1.7%). From the public health point of view, candida infection is responsible for Thrush of the mouth particularly in debilitated infants (MARPLES, 1960), also it is a common cause of vaginitis and vulvovaginitis in women (RAUT, 1971). Moreover, Rhodotorula mucilaginosa isolated (1.7%) Table (3) which incriminated in human mycosis (RIETH, 1973).

From the results achieved, one may safely conclude that apparently normaly stray dogs in Behera Governorate may harbour a variety of bacterial and mycotic pathogens constituting a potential health hazard to other animals and man.

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Table 1: Number and incidence of identified pathogenic members of Enterobacteriaceae islated from faeces of stray dogs.

Isolates	No.	%
Escherichia coli	64	55.7
Proteus vulgaris	9	7.8
Proteus mirabilis	6	5.2
Proteus morgani	2	1.7
Proteus rettgeri	1	0.9
Enterobacter spp.	13	11.3
Citrobacter freundi	8	6.9
Aerobacter aerogenes	1	0.9
Klebsiella pneumoniae	3	2.6
Providencia spp.	4	3.5
Salmonella typhimurium	2	1.7
Salmonella enteritidis	1	0.9
Shigella flexneri type 6	1	0.9
Total	115	100.0

Table 2: O-Serotypes and their incidence of pathogenic E.coli in faeces of dogs.

O-Serotypes	No. of isolates	%
02	3	4.7
04	3	4.7
0606	2	3.1
011	1	1.6
015	2	3.1
026	1	1.6
0101	2	3.1
non-pathogenicE.coli	50	78.1
Total	64	100.0

Table 3: Number and incidence of identified Mould and Yeast isolated from faeces of stray dogs.

Isolates	No.	%
Mould spp.:		
Aspergillus niger	9	7.8
Aspergillus flavus	6	5.2
Aspergillus fumigatus	2	1.7
Mucor spp.	5	4.4
Yeast spp:		
Rhodotorula mucilaginosa	2	1.7
Yeast-like organisms:		
Candida albicans	4	3.5
Candidatropicalis	2	1.7
Total	30	26.0