Salmonellae occuring in animals slaughtered in Assiut, Upper Egypt.

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SUMMARY: 595 speciemens were collected from apparently healthy animals subjected to slaughter in Assiut abattoir. By using Tetrathionate broth, Selenite F broth, Salmonella Shigella agar "SS agar" and Xylose Lysine Desoxycholate agar "XLD agar", Salmonellae could be isolated with percentage 12 & 5.7 from buffaloes and beef carcasses respectively. Salmonellae revealed from mesentric lymph nodes, faeces and hepatic tissues. Two serotypes S. tshinogwe & S. rissen could be identified. The obtained results indicated that healthy buffaloes and cattle are reservoirs of salmonellae. Tetrathionate broth and XLD agar gave better results for isolation of Salmonellae.

INTRODUCTION: Evidence to implicate meat and meat products as potential sources of Salmonella infection in man has been presented by a number of investigators LEE (1974) and GRACEY (1981).

Many researchers were recorded Salmonellae in salughtered animals. WEISSMAN (1969) isolated 74% Salmonellae from beef carcasses, EL-NAWAWI et al (1980) isolated 33.3%, 26.2%, 3.3% and 20% Salmonellae from camels, Pigs, buffaloes and sheep slaughtered in Cairo abattoir respectively. The isolated serotypes were S.derby,S.cottbus and S. munesters. MATHEW et al (1982) recorded 5.33% of Salmonellae in the examined gall bladders of 225 cattle. YOUSSEF et al (1982) isolated S. typhimurium, S. muenchen, S. Larochelle and S. partyphi B from mesentric lymph nodes, bile and intestinal content of slaughtered buffaloes and cattle with percentage 7.3 and 2.4 respectively. LOTFI et al (1986) recovered 3.34% S. enteritidis and 6.66% S. paratyphi B from emergency slaughtered animals.

The present work was planned to determine the incidence of Salmonellae in adult healthy animals slaughtered in Assiut abattoir, Egypt and to identify the serotypes of isolates.

MATERIALS AND METHODS: 595 samples (faecal, mesentric lymph nodes, hepatic tissues, gall bladder, hepatic lymphnodes, kidney and pieces of muscles from supraspinatus and gluteal muscle) were collected from apparently healthy 50 buffaloes and 35 cattle subjected to slaughter at Assiut abattoir.

Pieces of the samples were transferred to 100 ml peptone water for 24 hour at 37°C.Then 10 ml of the incubated broth were transferred to 90 ml each of selective enrichment selenite F broth (DIFCO) and tetrathionate broth (DIFCO 104-01) and incubated at 43°C for 48 hours. At the end of incubation period, loopfuls from each sample were

streaked on selective media SS agar (Oxoid CM 99) and XLD agar (Oxoid CM 469). The inoculated plates were then incubated at 37°C for 24 hours. Suspected colonies (non-lactose fermenters) on SS agar medium appeared opaque, transparent, uncoloured, black or with black center and clear periphery. On XLD agar suspected colonies were red with or without black centers.

In order to trace the main source of meat contamination with Salmonella: Knives, slaughtermen hands and clothes were also examined.

Knives and slaughtermen hands were swabbed with moist sterile swabs. The swabs were returned to flask containing 100 ml ¼ strength Ringer's solution. For examination of clothes, the choosen area under examination was stretched over a sterile jar having a mouth area 68 cm, then 68 ml ¼ strength Ringer's solution were poured on the cloth so that the area over the jar was rinsed into it. The rinsed solution was returned again to the sampling flask. Isolation of salmonella was carried out as previously mentioned.

Identification of Salmonellae were carried out according to COWAN (1975) and COLLE et al (1989).

RESULTS & DISCUSSION: From the achieved results in table (1) it is evident that Salmonella spp. could be isolated from slaughtered buffaloes and cattle with percentage 12 and 5.7 respectively.

The incidnece of Salmonellae in buffaloes carcasses was found to be higher than values obtained by EL-NAWAWI et al. (1980), YOUSSEF et al.(1982) and LOTFI et al. (1986) who isolated 3.3%, 7.3% and 0.33% Salmonelloe respectively.

The results indicated that salmonellae could be isolated from beef carcasses with lower incidence than buffaloes carcasses. Similar findings were obtained by FLOYD et al. (1953), MATHEW et al. (1982) and YOUSSEF et al. (1982).

Two serotypes were recovered from the samples examined, S. tshiongwe & S.rissen (Table 2).

Table (3) pointed that by using enrichment media tetrathionate broth, two strains of S.tshiongwe recovered from each mesentric lymph nodes and faeces on XLD and only one strain isolated from mesenric lymph nodes on SS agar.

On the other hand, by using selenite F. broth as enrichment media, one strain of S. rissen isolated from each mesentric lymph nodes, faeces and hepatic tissues on SS

agar.

The recorded results proved that tetrathionate broth and XLD agar generally a better media for isolation of Salmonella. Similar findings were reported by VIRGINIA et al. (1974), BAILEY et al. (1981) and COLLE et al. (1989).

Salmonellae isolated with higher incidence from mesentric lymph nodes (4.7%) than faeces (3.5%), on the other hand, the organism revealed with lower rate (1.2%) from hepatic tissues. Similar observations were recorded by FLOYD et al. (1953), KAMPELMACHER (1963) EL-NAWAWI et al. (1980) and YOUSSEF et al. (1982), that besides mesentric lymph nodes, Salmonellae can be recovered from faeces, liver, bile and spleen.

With respect to contamination of meat with Salmonella through meat contact surfaces, the organism failed to be detected in 96 swabs obtained from hands, clothes and knives of butchers.

CONCLUSIONS: The present study indicate that healthy buffaloes and cattle slaughtered in Assiut abattoir are carrier of Salmonellae. Buffaloes contain more organisms than cattle. Two strains S. tshiongwe and S.rissen were recorded from the animals slaughtered in the examined area.

Salmonellae present relatively with high incidence in mesentric lymph nodes than faeces, while the orgnaism recovered with low level from hepatic tissues.

Tetrathionate broth and XLD gave better results for isolation of Salmonella than Selenite F. broth and SS agar.

Reduction of Salmonellae in food animal origin can be achieved by bacteriological monitoring should carried out to ensure presence or absence of Salmonellae, proper disposal of animal excreta and application of cold chain to prevent multiplication of Salmonella in low levels contaminated foodstuffs.

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Table (1) : Incidence of Salmonella isolated from Slaughtered buffaloes & Cattle

Animal species	No. of carcasses examined	Isolates	
		No.	percent
Buffaloes	50	6	12.0
Cattle	35	2	5.7

Table (2) : Salmonella serotypes recovered from adult healthy slaughtered animals

Salmonella	Antigenic Formula			
	Group	O	Phase 1	Phase 2
S. tshiongwe	C_2	6,8	e,h	e.n.z_{15}
S.rissen	C_1	6,7	F_9	-

Table (3) : Types and number of Salmonella organisms isolated from the samples by using different enrichment & selective media.

Isolate	Tetrathionate broth						Selenite F broth					
	XLD			SS agar			XLD			SS agar		
	N.L.N.	F.	H.	M.L.N.	F.	H.	M.L.N.	F.	H.	M.L.N.	F.	H.
S.tshiongwe	2	2	-	1	-	-	-	-	-	-	-	-
S.rissen	-	-	-	-	-	-	-	-	-	1	1	1
Total	2	2	-	1	-	-	-	-	-	1	1	1

F. = Faeces M.L.N. = Mesentric lymph node H. hepatic tissue

Table (4) : Incidence of Salmonellae from the examined samples

Speciemens	Buffaloes carcasses		beef carcasses		Total isolates	
	No. of	No. of	No. of	No. of	No.	percent
- Mesentric lymphnodes	50	3	35	1	4	4.7
- Faeces	50	2	35	1	3	3.5
- Liver	50	1	35	-	1	1.2