

contents

	<i>Page</i>
<u>1-Introduction</u> -----	1
<u>2-Review of literature</u> -----	4
2.1-Incidence of salmonellae in pigs -----	4
2.2-Isolation and characterization of salmonellae-----	
2.2.1-Conventional methods -----	31
2.2.2-Applied recent technique -----	41
2.3-Pathogenesis of salmonellae -----	46
2.4-Antibiogram of salmonellae isolated from pigs-----	53
<u>3-Materials and methods</u> -----	63
3.1-Materials -----	63
3.1.1-Samples -----	63
3.1.1.1- Farms -----	63
3.1.1.2- Abattoir -----	63
3.1.2-Culture media -----	66
3.1.2.1- Media used for isolation -----	66
3.1.2.2-Media used for biochemical reaction -----	69
3.1.3-Reagents and chemicals -----	70
3.1.4-Stain used. -----	70
3.1.5-Diagnostic salmonella antisera. -----	71
3.1.6-Materials used for enzyme linked immunosorbent assay-----	71
3.1.6.1- Reagents -----	71
3.1.6.2- Equipment -----	71
3.1.6.3- Animals -----	72
3.1.7-Experimental animals -----	72
3.1.8-Media used for the disc diffusion method -----	72
3.1.9-Antibacterial discs. -----	73

	<i>Page</i>
3.2-Methods: -----	74
3.2.1- <i>Collection of samples</i> -----	74
3.2.1.1- <i>Samples from pigs</i> -----	74
3.2.1.2- <i>Samples from slaughtered pigs</i> -----	74
3.2.2- <i>Bacteriological examination</i> -----	74
3.2.3- <i>Identification of isolate.</i> -----	75
3.2.4- <i>Serological identification of Salmonellae</i> -----	77
3.2.5- <i>ELISA for detection of Salmonella antigen in swine faecal samples</i> -----	78
3.2.6- <i>Experimental infection</i> -----	82
3.2.7- <i>In vitro antibiotic sensitivity of the salmonella isolates.</i> -----	83
 <u>4- Results</u> -----	 86
 <u>5-Discussion.</u> -----	 107
 <u>6- Summary.</u> -----	 114
 <u>7- Referances.</u> -----	 117
 <u>8- Arabic summary.</u>	

Lists of definitions

Porcine Salmonella: Swine (pig) Salmonella

Pork: the pig meat used for human consumption.

Piglet: baby pig (suckling-weaning).

Sow: a female which has had a litter.

Boar: An uncastrated male for breeding.

Geltis: a female pig which is not yet bread.

Hog: a castrated male (usually 6-8 weeks) for slaughtered.

Hedgehog: wild pig.

Piggery: The farm on which pig is bread.

List of Abbreviations

- *B. C.*-----Broth culture
- *B. S. A.* -----Bovine serum albumin
- *B. P. W.*-----Buffered peptone water
- *C.F. U.*-----Cell forming unit
- *D. D. W.*-----Double distilled water
- *H. E.*-----Hektoen Enteric agar
- *I / P* -----Intra peritoneal
- *L. P. S.*-----Lipopolysaccharide
- *M.D.R* -----Multidrug resistant.
- *P.M* -----Post mortem
- *R.V.*-----Rappaport Vasiliadis
- *S. S.*-----Salmonella – Shigella agar
- *S. F. B.*-----Selenite F. broth
- *T. S. I.*-----Triple Sugar Iron agar

6- Summary

Salmonellosis is primarily a zoonotic disease and intervention is possible at any stage from farm to fork. As it is well known, Salmonella has a wide range of host food animals.

The carriage rate of Salmonella in pigs are much more higher than other animals. As most Salmonella infections in pigs are subclinical, it is not easy to assess trends in infection by means of reports of clinical investigations.

A total of 705 samples from pigs were examined bacteriologically for Salmonella (225 apparently healthy pigs, 150 diarrheic pigs and 70 slaughtered pigs). Twenty seven out of 120 faecal samples from apparently healthy pigs with an incidence of (12%) were found to be positive for Salmonella and 23 out of 150 diarrheic animals with an incidence of (15.3%) were also positive. From the results, it is clear that higher incidence was obtained from fattening pigs (16%) and weaned piglets (13.8%) than newly born suckling (5.7%) and adult breeder animals (8%).

While at abattoir, 23 out of 70 slaughtered pigs were positive with percentage of (32.9%). From 330 internal organs examined, 52 were positive for Salmonella with an incidence of (15.8%).

Comparing the different sites of sampling, it was revealed that bile (23.8%), caecal contents (22.9%) and mesenteric lymph nodes (18.5%) were the most predilection sites for Salmonella than liver (7.1%) and spleen (6.5%).

Serotyping of 102 Salmonella isolates revealed 5 different serovars, 37 isolates of *S.Typhimurium* (36.3%), 22 of *S. Enteritidis* (21.7%), 14 isolates of *S. Anatum* (13.7%), 15 isolates of *S. Derby* (14.7%) and 14 isolates of *S.Choleraesuis* (13.7%).

A trial was carried out to apply enzyme linked immuno -sorbent assay (ELISA) for the detection of Salmonella antigen in faecal samples using “double antibody sandwich method”. *S.Typhimurium* antigen could be detected in 13 out of 150 diarrheic faecal samples of which(8) were previously proved to be positive for *S.Typhimurium* by traditional methods, while Salmonella negative faecal samples were tested by ELISA. Five diarrheic faecal samples proved to be Salmonella positive by ELISA and negative by conventional methods.

Pathogenicity of Salmonella strains showed that *S.Choleraesuis* was the most pathogenic for mice with mortality (90%) and death occurred from the first day of inoculation, followed by *S.Typhimurium* which caused (70%) mortality and death happened from the second day of inoculation, in *S.Entertidis* mortality reached (50%) with death started from the third day of inoculation.

Finally, studying the in vitro sensitivity of five isolated Salmonella strains to (16) antimicrobial agents revealed that Salmonella isolates were highly sensitive to amikacin, danofloxacin, gentamicin, enrofloxacin and

ceftiofur, variable to ampicillin, chloramphenicol and trimethoprim / sulphamethoxazole and resistant to lincomycin, neomycin, cephalothin, streptomycin, tetracycline, erythromycin, colistin sulphate and clindamycin

The results of the present study suggested that future control measures should be focused on reduction of Salmonella infection on pig farms and minimizing the contamination of the carcasses at slaughter.