

THE INFLUENCE ON COMMUNITY-HEALTH AND FOOD-HYGIENE VIA ISOLATED *SALMOMELLA* FROM RAW-FOODS AND MORE-RECENT ANTIBIOTIC SENSITIVITY PATTERNS, TAIF, KSA

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ABSTRACT

This work aimed to confirm "The influence *Salmonella* on community-health (CH) and food-hygiene (FH) in raw-foods (RFs) and More-recent (MR) antibiotic sensitivity patterns to *Salmonella*. In Taif, (KSA), the results was (35.0, 25.0, 17.5, 10.0, 7.5 and 5.0%) for *Salmonella* types (*Non typhi* group D, *Para typhi* group B, *Para typhi* group A, *Para typhi* group C, *Salmonella Spp* and *Enteritidis*), respectively. The effect of antibiotics were (CAX, CFT, C, CP, T/S and AM) as (98.8, 97.7, 87.3, 85.3, 65.7 and 48.5%) respectively. The scores were (100, 89.5, 84.0, 83.3, 76.5 and 66.7%) for *Salmonella* (*Spp.*, *Non typhi* group D, *Para typhi* group B, *Enteritidis*, *Paratyphi* group A and *Paratyphi* group C), respectively. The excellent MR antibiotics were (CAX, CFT, C, CP and T/S), the effect ratios were given 100%. The good MR antibiotics were (C, CP, CAX, T/S, CFT and AM), the effect ratios were given (75-100%). The approved MR antibiotics were (Am, T/S, C and CP), the effect ratios were given (50-75%). The not approved MR antibiotics were (AM, T/S and AM), the effect ratios were given (under 50%). That concluded must take the hygienic precautions and healthy measures such as non-use of antibiotics in animal and bird rations, monitoring of (slaughter-houses, grocery, stores, fast food shops and their employees), making "Rapid Treatment System" for infected individuals is recommended. The "Protective Medicine Unit" and "Municipals Unit" belong to MOH must be immediately follow the food bacterial contamination sources for healthy eradication that to protect the CH and FH.

INTRODUCTION

In Riyadh, chicken meat revealed 5.92% *Salmonella*[1], in AL-Ahsa resulted *Salmonella Spp.*[2], in Jeddah, meat samples gave 45% *Salmonella Spp.*[3], *Salmonella Spp.* were a common food-borne pathogen for poultry and meat[4], as well in Jazan, was practiced of street sellers as food-borne pathogens. However in Jeddah, butchers involved in food bacterial contamination[5]. In Riyadh, *Salmonella Spp.* were isolated[6].

The multidrug-resistant was vital community health problem[7]. *Salmonella Spp.* antibiotics resistance was attributed to use antibiotics in animals nourishing[8]. The uses of antibiotics to treat animal and human led to elaborate horizontal resistance genes transfer between bacteria[9]. The antibiotics resistance *Salmonella Spp.* was attributed to enzymatic poverty, delaying cell permeability, initiation of antimicrobial efflux-pumps, and modification drugs actions site [7]. In Riyadh, most *Salmonella Spp.* resistance to (1st and 2nd) group (cephalosporin and aminoglycosides). The 1st line antibiotics used as Salmonellosis treatment including (ampicillin, trimethoprim–sulfamethoxazole, and chloramphenicol). *Salmonella Spp.* also revealed resistance to 3rd group (cephalosporin and B-lactam antibiotics, trimethoprim–sulfamethoxazole, chloramphenicol, and tetracycline)[6].

This work was aimed to prove the harm effects on CH and FH by isolation of *Salmonella* bacteria from RFs and confirm the presence of *Salmonella* bacteria were resistant to MR antibiotics and caused Salmonellosis to patients. Salmonellosis coasted the country for human hospitalization and treatments which affected the CH, caused food contamination, food-borne diseases and food poisoning to the consumers, also leading to lose food quality which affected FH.

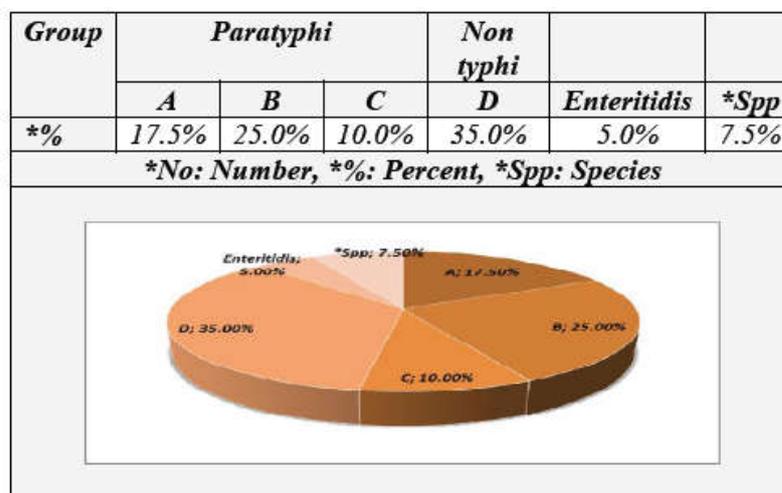
MATERIALS AND METHODS

- **Collection of samples:** The samples were collected as (RFs of meat types) from private markets after getting approved[9].
- **Bacterial methods:** Isolation and identification was applied using the ideal bacterial methods[9].

- **Salmonella serotyping:** Phonex and agglutination test was used for *Salmonella* serotyping [10].
- **Antibiotic sensitivity test:** The ideal method for MR antibiotics sensitivity patterns which used for Salmonellosis treatment[11].
- **Data analysis:** The results satisfied were collected and were analyzed by simple Excel method[12].

RESULTS AND DISCUSSION

Table 1 and graph 1: The mean percent of the *Salmonella* isolates



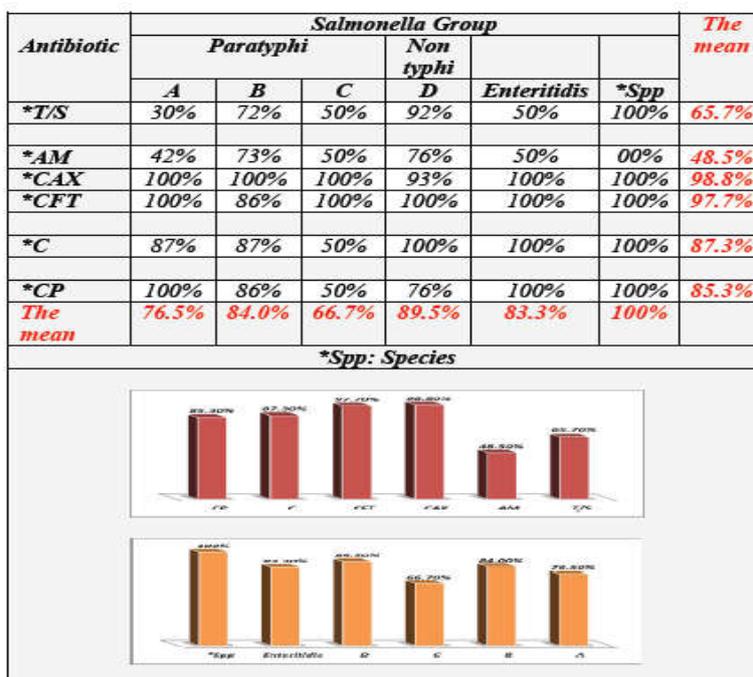
The mean percent of the *Salmonella* isolates were shown in table 1 and graph 1. The isolates of *Salmonella* were the most important in RFs. There was (35.0, 25.0, 17.5, 10.0, 7.5 and 5.0%) for *Salmonella* types (Non typhi group D, Para typhi group B, Para typhi group A, Para typhi group C, *Spp* and *Enteritidis*), respectively. The most existent was for *Salmonella* Non typhi group D(1/3 times) of the total isolates), while the lowest existent was *Salmonella Enteritidis* (1/20 times) of the total isolates) but causing Salmonellosis. It has been found that all isolates were lead to contamination of RFs and causing food poisoning, which affects the CH and FH[1-6].

Table 2: MR antibiotic ditrubiatio according to original family

<i>Antibiotic</i>		
<i>Symbol</i>	<i>Name</i>	<i>Family</i>
<i>*T/S</i>	<i>Co-trimoxazole</i>	<i>Trimethoprim / Sulfadiazine</i>
<i>*AM</i>	<i>Ampicillin</i>	<i>β-Lactam</i>
<i>*CAX</i>	<i>Cefotaxime</i>	
<i>*CFT</i>	<i>Ceftriaxone</i>	
<i>*C</i>	<i>Chloramphenicol</i>	<i>Chloramphenicol</i>
<i>*CP</i>	<i>Ciprofloxacin</i>	<i>Fluroquinolone</i>

MR antibiotic distributions according to original family were shown in table 2. The origin of each antibiotic was depend on their structures and effects.

Table 3 and graph (2 and 3): The mean percent of MR antibiotic sensitivity patterns



The mean percents of MR antibiotic sensitivity patterns were shown in table 3 and graph (2 and 3). The highest effect of the MR antibiotics were by (CAX, CFT, C, CP, T/S and AM) as (98.8, 97.7, 87.3, 85.3, 65.7 and 48.5%), respectively[6-8]. The score of *Salmonella* isolates was by their mean of MR antibiotics tested was (100, 89.5, 84.0, 83.3, 76.5 and 66.7%) for *Salmonella* (*Spp.*, *Non typhi* group D, *Para typhi* group B, *Enteritidis*, *Paratyphi* group A, and *Paratyphi* group C), respectively. Most isolates were affected, indicating the MR antibiotic group used had a variable effect according to isolates types[6-8].

Table 4: The mean percent of MR antibiotics sensitivity patterns arrangement

Category	Salmonella Group						The mean
	Paratyphi			Non typhi	Enteritidis	*Spp	
	A	B	C	D			
Excellent (100%)	CAX=100% CFT=100% CP=100%	CAX=100%	CAX=100% CFT=100%	CFT=100% C=100%	CAX=100% CFT=100% C=100% CP=100%	T/S=100% CAX=100% CFT=100% C=100% CP=100%	CAX CFT C CP T/S
Good (75-100%)	C=87%	C=87% CFT=86% CP=86%	--	CAX=93% T/S=92% AM=76% CP=76%	--	--	C CP CAX T/S CFT AM
Approved (50-75%)	--	AM=73% T/S=72%	T/S=50% AM=50% C=50% CP=50%	--	T/S=50% AM=50%	--	AM T/S C CP
Not approved Under (50%)	AM=42% T/S=30%	--	--	--	--	--	AM T/S
Not approved (Zero%)	--	--	--	--	--	AM=00%	AM

*Spp: Species

The mean percents of MR antibiotics sensitivity patterns arrangement were shown in table 4. The excellent MR antibiotics were (CAX, CFT, C, CP and T/S),

the effect ratios were given 100%. The good MR antibiotics were (C, CP, CAX, T/S, CFT and AM), the effect ratios were given (75-100%). The approved MR antibiotics were (Am, T/S, C and CP), the effect ratios were given (50-75%). The not approved MR antibiotics were (AM, T/S and AM), the effect ratios were given (under 50%) as resistant. It had been found the ratio average were given replication of MR antibiotics in the different degrees so for different sensitivity of isolates[6-8].

CONCLUSIONS

The present study cleared the existence of several *Salmonella* isolates from RFs, affected CH and FH because of the formation of bacterial resistance strains might spread in the community. Taken hygienic precautions and measures as non-use of antibiotics in animal and bird rations, monitoring of (slaughter-houses, groceries, stores, fast food shops and their employees), making "Rapid Treatment System" for infected individuals is recommend. The "Protective Medicine Unit" and "Municipals Unit" belong to MOH must be immediately following the food bacterial contamination sources for healthy eradication to protect CH and FH.

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التأثير على صحة المجتمع والغذاء عن طريق عزل السالمونيلا من الأغذية الخام وأحدث أنماط الحساسية للمضادات الحيوية، الطائف، المملكة العربية السعودية

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الخلاصة

يهدف هذا العمل إلى تأكيد "التأثير على صحة المجتمع والغذاء عن طريق عزل السالمونيلا من الأغذية الخام وأحدث أنماط الحساسية للمضادات الحيوية، الطائف، المملكة العربية السعودية"، بينت النتيجة لوجود انواع السالمونيلا بنسبة (٣٥.٠ و ٢٥.٠ و ١٧.٥ و ١٠.٠ و ٧.٥ و ٥.٠%) لكلا من: (Non typhi group D, Para typhi group A, Para typhi group C, Spp and Enteritidis) علي التوالي. كان تأثير المضادات الحيوية (CAX, CFT, C, CP, T/S and AM) حيث بلغت النسب (٩٧.٧، ٩٨.٨،

(٨٧.٣، ٨٥.٣، ٦٥.٧، ٤٨.٥٪) على التوالي، وكانت النتائج (١٠٠، ٨٩.٥، ٨٤.٠، ٨٣.٣، ٧٦.٥ و ٦٦.٧٪) على انواع السالمونيلا (Spp., Non typhi group D, Para typhi group B, Enteritidis, Paratyphi) (group A and Paratyphi group C (CAX, CFT, C, CP and T/S) أعطت نسب التأثير (٧٥-١٠٠٪)، وكانت المضادات الحيوية المعتمدة (C, CP, CAX, T/S, CFT and AM) أعطيت نسب التأثير (٥٠-٧٥٪). كانت المضادات الحيوية المقاومة لها البكتيريا (Am, T/S, C and CP) أعطيت نسب التأثير (أقل من ٥٠٪). نوصي أن تتخذ الاحتياطات الصحية والتدابير الصحية مثل عدم استخدام المضادات الحيوية في علائق الحيوانات والطيور ومراقبة (المسالخ، البقالة، المخازن، محلات الوجبات السريعة وموظفيها)، عمل "نظام المعالجة السريعة" لمرضي السالمونيلا، يجب علي "وحدة الطب الوقائي" و "وحدة البلديات" التي تنتمي إلى وزارة الصحة متابعة سريعة لمصادر التلوث البكتيري للغذاء للقضاء الصحي علي المصدر، ذلك لحماية صحة المجتمع والاغذية.

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