

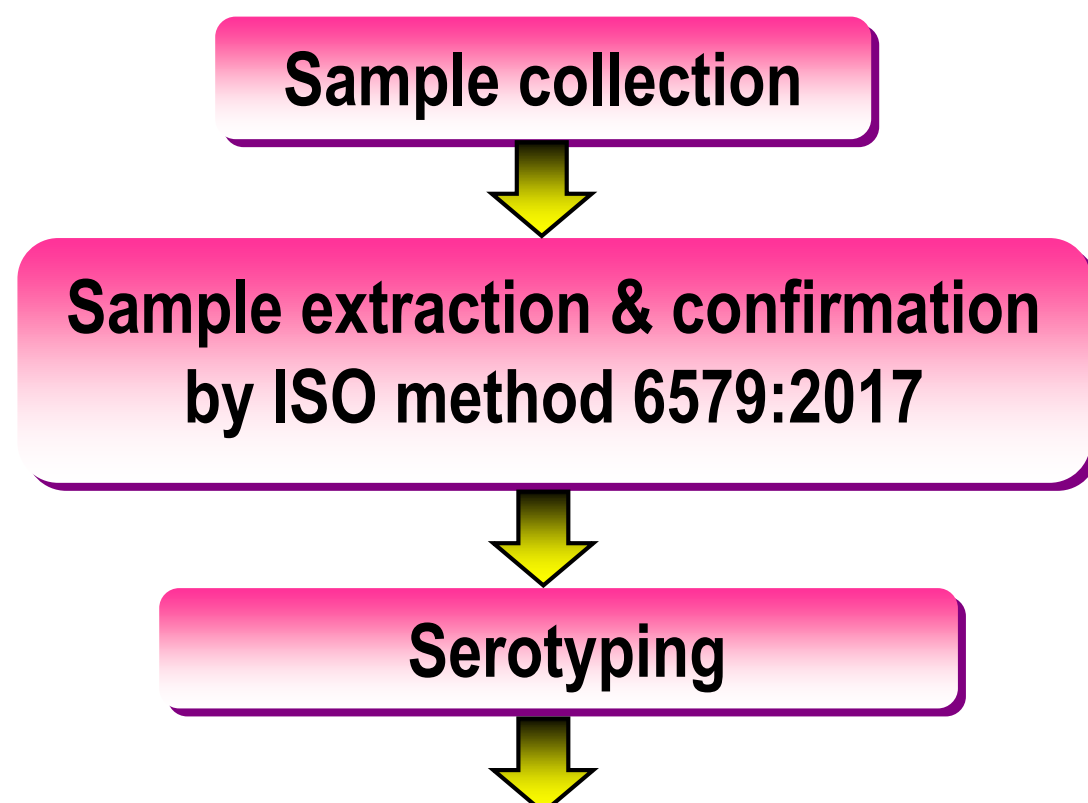
ANTIMICROBIAL RESISTANCE OF *SALMONELLA* SPP. IN FOOD AND ENVIRONMENTAL SWAB LINKED TO FOOD POISONING CASES FROM SELANGOR, KUALA LUMPUR, NEGERI SEMBILAN AND MALACCA

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INTRODUCTION

Salmonellosis is a global public health concern. The emergence of several *Salmonella* serotypes resistant to multiple antibiotics in food and animals underscores a significant food safety hazard. A comprehensive assessment of *Salmonella* with antimicrobial resistance (AMR) characteristics in the food chain is essential to demonstrate the actual exposure of humans to the specific serovar of *Salmonella* connected with gastrointestinal illness. Therefore, this study aimed to determine the AMR properties in the *Salmonella* strain isolated from foods and environmental swab samples linked to food poisoning cases in Selangor, Kuala Lumpur, N.Sembilan, and Malacca from 2018 to 2021.

METHODOLOGY



i. Disk Diffusion Method

- ampicillin, 10µg
- cefotaxime, 30µg
- ciprofloxacin, 5µg
- streptomycin, 10µg
- trimethoprim-sulfamethoxazole, 1.25/23.75µg
- ceftiofur, 30µg
- chloramphenicol, 30µg
- gentamicin, 10µg
- tetracycline, 30 µg

ii. Minimum inhibitory concentration method- Colistin

RESULTS

Table 1 : The antimicrobial resistance profiles of the *Salmonella* serotypes for 10 different antibiotics.

Serotypes	Number of isolates	Resistance rate, %									
		AMP	TET	CST	STR	CHL	SXT	CTF	GEN	CTX	CIP
Enteritidis	14 (32.6%)	36	50	29	14	0	0	7	0	0	0
Poona	7 (16.3%)	43	0	14	0	0	0	0	0	0	0
Branchester	3 (7.0%)	100	0	33	33	33	67	0	0	0	0
Corvallis	3 (7.0%)	67	33	0	33	0	0	0	0	0	0
Agona	2 (4.7%)	0	0	0	0	0	0	0	0	0	0
Albany	2 (4.7%)	100	0	0	0	50	50	0	0	0	0
Weltevreden	2 (4.7%)	50	0	50	0	0	0	0	0	0	0
Braenderup	1 (2.3%)	0	0	0	0	0	0	0	0	0	0
Gabon	1 (2.3%)	0	0	0	100	0	0	0	0	100	0
Havana	1 (2.3%)	0	0	0	0	0	0	0	0	0	0
Kisii	1 (2.3%)	0	0	0	0	0	0	0	0	0	0
Livingstone	1 (2.3%)	0	0	0	0	0	0	0	0	0	0
Llandoff	1 (2.3%)	100	100	100	0	100	100	100	100	0	0
Mbandaka	1 (2.3%)	0	0	0	0	0	0	0	0	0	0
Paris	1 (2.3%)	100	0	0	0	0	0	0	0	0	0
Saintpaul	1 (2.3%)	100	10	0	0	0	0	0	100	0	0
Typhimurium	1 (2.3%)	0	100	0	100	0	0	0	0	0	0
Total	43	44	26	19	14	7	9	5	5	2	0

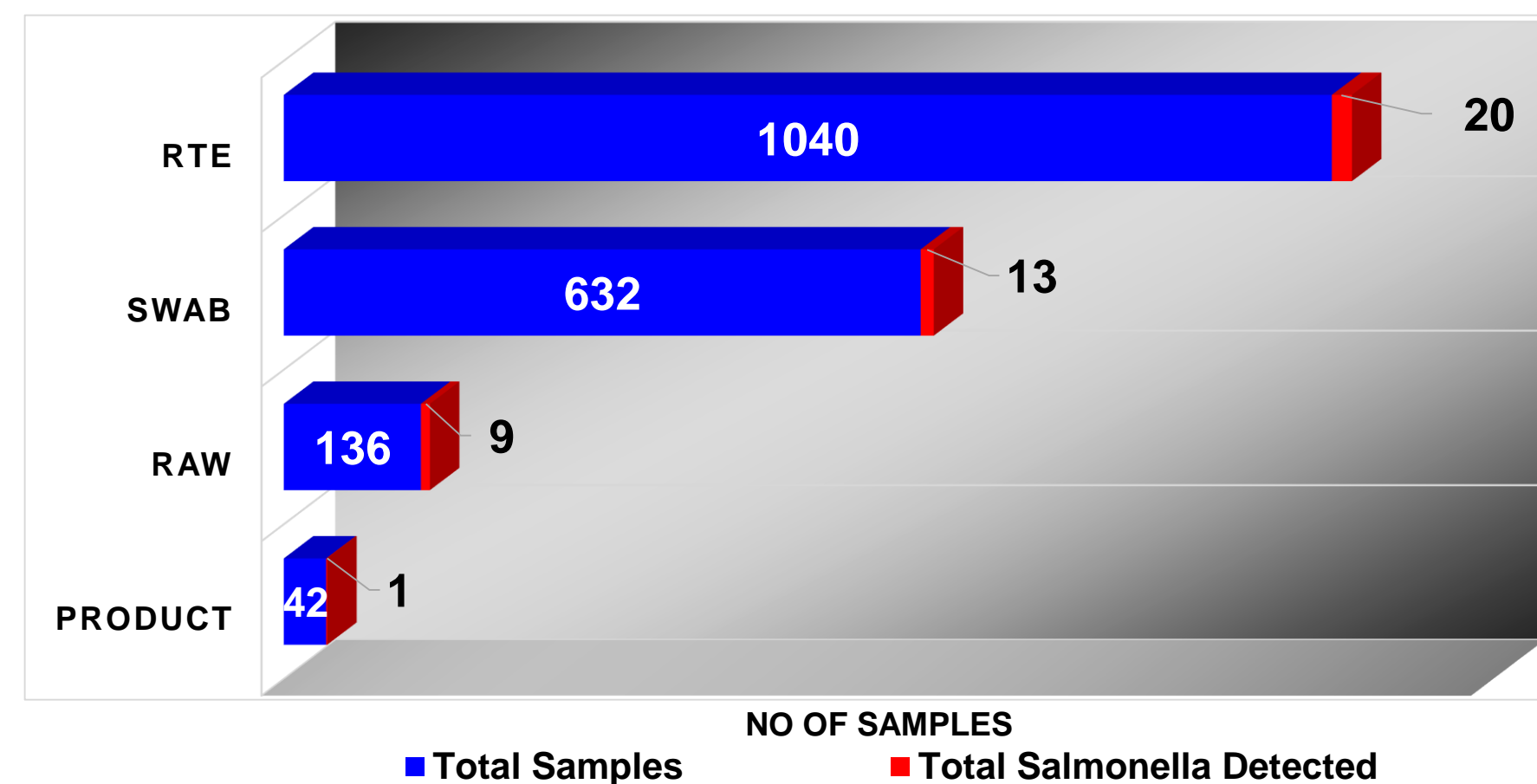


Figure 1 : No. of samples analyzed and detected with *Salmonella* spp. from 2018 until 2021 for four types of foods

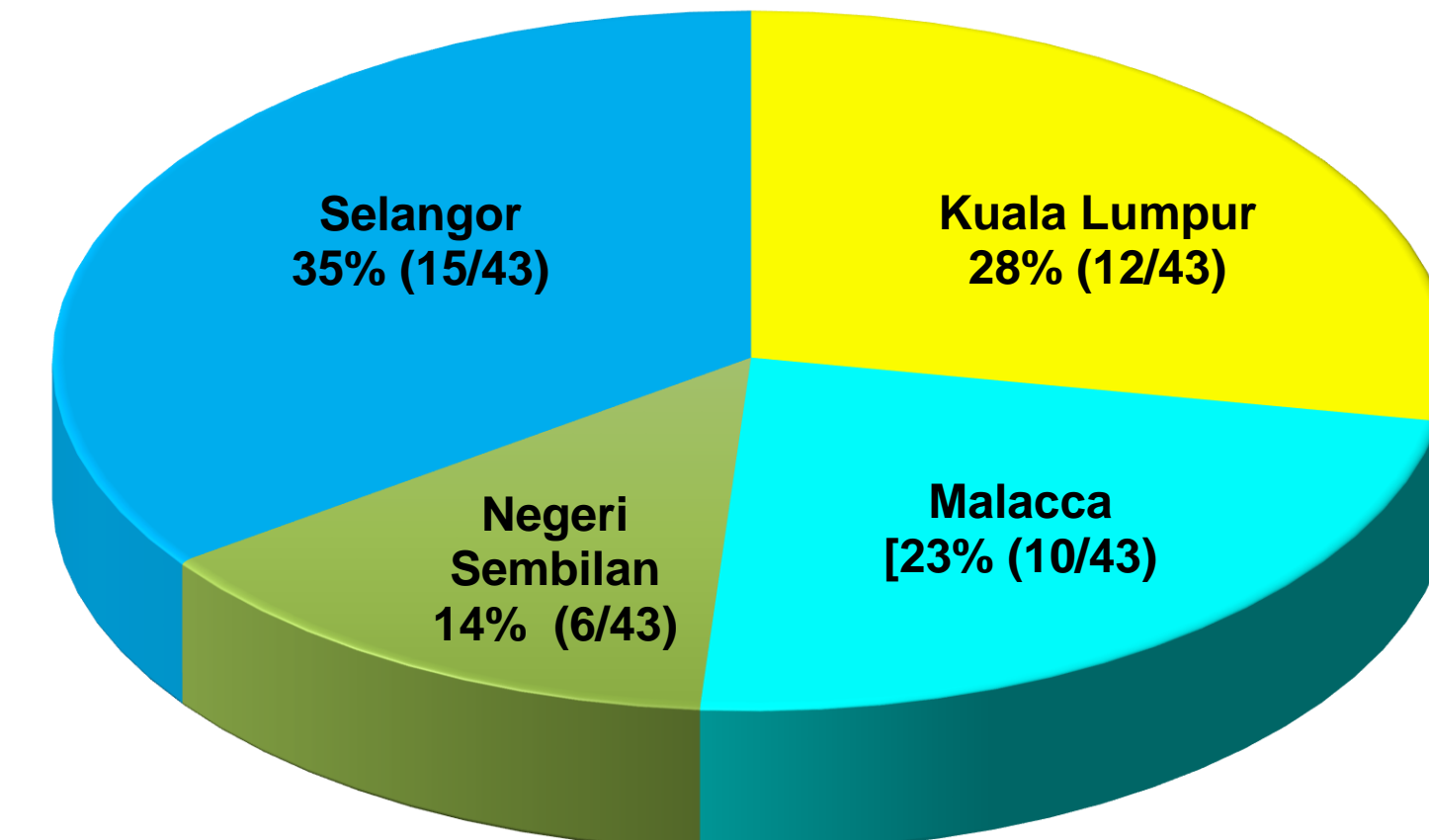


Figure 2 : No of samples analyzed and detected with *Salmonella* spp. from 2018 until 2021 from four different states

DISCUSSION

- Of the 1850 food sample analysed, 43 (2.3%) were positive for *Salmonella* spp.
- The highest percentage of contamination rate of *Salmonella* spp. was detected in Selangor (35%).
- Salmonella* was most detected in ready to eat food while the least in food product.
- The *S. Enteritidis* strain was predominant (32.6%) followed by *S. Poona* (16.3%) while the prevalence of other strains ranged from 7.0% to 2.3%.
- Of all the *Salmonella* isolates tested, 36 (83.7%) were resistant to at least one antimicrobial agent.
- The highest resistance was found against ampicillin (44%), followed by tetracycline (26%), colistin (19%), streptomycin (14%) and others (9% – 2%). Ciprofloxacin was not resistant to any of the *Salmonella* strains isolated.
- S. Agona*, *S. Braenderup*, *S. Havana*, *S. Kisii*, *S. Livingstone* and *S. Mbandaka* were not resistant to any of the antimicrobial agent tested.

CONCLUSION

The findings from this study may suggest there is a strong correlation between the prevalence of *Salmonella* spp. and antimicrobial resistance for human health via food chain.

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