

Detection of *Salmonella* spp. in Raw Salmon Served in Sushi Shops

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Structured Abstract

Background: *Salmonella* spp. can cause a foodborne illness such as Salmonellosis that has been a huge concern to public health due to the huge consumer of raw foods such as sushi. Though less common in fish than in poultry, salmon can also be contaminated through a poor hygiene, improper handling or polluted water sources. With the increasing of raw salmon sushi consumption, the risk of salmonellosis infection is high. In Malaysia between 2011 to 2020 *Salmonella* spp. is responsible for 391 cases and there is a limited data about its resistance to antibiotics.

Methods: Raw salmon samples were collected from three sushi shops in Shah Alam. Each sample was blended and subjected to serial dilution. The bacterial load was determined in Nutrient Agar and isolation of *Salmonella* spp. in Salmonella-Shigella Agar. Biochemical tests such as Gram staining, Catalase test, Indole test and Triple Sugar Iron (TSI) test were performed to determine the identification of *Salmonella* spp. Antibiotic resistance testing was performed against five antibiotics including Amikacin, Aztreonam, Chloramphenicol, Cefoxitin and Vancomycin. The zone inhibition was measured using vernier calliper to determine the resistance.

Results: All samples show a high total bacteria count above the standard limits. *Salmonella* spp. was detected in two samples which were sample E and Z with sample E give the highest contamination level. Biochemical tests confirmed the presence of *Salmonella* spp. as Gram-negative and rod shape. It also a Catalase positive that produced H₂S even in Triple Sugar Iron (TSI) test but were Indole negative. Antibiotic test shows that *Salmonella* spp. susceptible towards Amikacin, Aztreonam and Chloramphenicol but resistance to Vancomycin and Cefoxitin.

Conclusion: Overall, findings of this research have indicated raw salmon sushi to be a potential health risk with high bacterial levels and presence of *Salmonella* spp., of which some are antibiotic-resistant. Furthermore, the research indicates strict adherence to hygiene, storage, and handling when preparing. It further shows the importance of employing effective antibiotics in the treatment of Salmonella infection.

Keywords: Raw Salmon, Sushi, *Salmonella* spp., Antibiotic resistance, Bacterial loads

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