Multiple drug resistance among Staphylococcus aureus strains isolated from cutting boards of commercial food premises: a threat to food and public health safety

ABSTRACT

Multidrug resistance among bacterial pathogens is an issue of global concern, especially in commercial food premises. This study aimed to isolate and identify the multidrug-resistant S. aureus from cutting boards of 45 restaurants in Sri Serdang, Selangor, Malaysia. Samples were obtained from the surfaces of 55 plastic cutting boards by swabbing and analyzed using 3M™ Petri film™ Staph Express Count Plate and Disk and further identified using Gram staining, coagulase and catalase tests and growth on mannitol salt agar and Baird Parker agar. Agar-disk diffusion technique was employed for antibiotic resistance against 11 antibiotics, and the results were analyzed based on the Clinical and Laboratory Standards Institute criteria. Out of 55 samples , 43.6% (n=24) were found to be positive for S. aureus. Of the 24 S. aureus, 45.8% (n=11) were multidrug-resistant. Resistance to the members of penicillins was 100%, to nalidixic acid (79.2%), to ciprofloxacin (66.7%), to cephalothin (33.3%) and ceftazidime (20.8%). There was no resistance to gentamicin, streptomycin, ceftriaxone, cefotaxime, and sulphafurazole. The emergence of multidrug-resistant S. aureus on cutting boards is an indication of poor personaland sanitary hygiene and could pose a danger of outbreak due to staphylococcal food poisoning among consumers.

Keyword: Staphylococcus aureus; Multidrug resistance; Antibiotics; Cutting boards; Restaurants