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Phenotypic and genotypic characterization of mrsa, vrsa, and erythromycin resistance staphylococcus aureus isolated from milk and milk products

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Staphylococcus aureus is considered the third most common cause of food poisoning worldwide. Milk and milk products are implicated to a large extent in staphylococcal food poisoning. Nowadays, detailed information on the resistance patterns of S. aureus in milk and cheese in the Egyptian market is strongly required to study risk assessment in case of food poisoning context and also to improve therapeutic approaches used in dairy farms. Our objective was to study the phenotypic and genotypic antibiotic resistance features of *S. aureus* isolated from milk and cheese from the Egyptian market. The multidrug-resistant S. aureus strains were detected in 31(77.5%, 31/40), 6(60%, 6/10), 12(60%, 12/20), 2(20%, 2/10), and 3(12%, 3/25) of raw cattle milk, sheep milk, traditional white cheese, cheddar cheese, and other cheese respectively. 71(67.6%, 71/105) and 67(63.8%, 67/105) of S. aureus strains showed oxacillin and penicillin resistance respectively. S. aureus strains were screened for the presence of mecA, vanA and ermC genes. 78(74.3%, 78/105), 50(47.6%, 50/105) and 38 (36.2%, 38/105) of these strains were carriers for mecA, ermC, vanA genes respectively. High level of MRSA 52(49.5%, 52/105) were detected and it was in details; 31(77.5%, 31/40), 5(50%, 5/10), 10(50%, 10/20), 5(20%, 5/25), and 1(10%, 1/10) within cattle milk, sheep milk, white cheeses, other cheese and cheddar cheese respectively. Out of 41(39.1%, 41/105) phenotypic vancomycin resistant S. aureus strains, 33(31.4%, 33/105) were both phenotypic vancomycin resistant and genotypic vanA gene carrier representing VRSA strains. Out of 48(45.7%, 48/105) isolated phenotypic erythromycin resistant S. aureus strains, 44(42%, 44/105) were ermC gene carrier. The detected mecA, vanA and ermC genes were statistically associated with their encoding phenotypic resistance patterns against penicillin and oxacillin, vancomycin and erythromycin respectively with a P-value ≤ 0.05 for each of them. Notably for any increase in the rate of mecA, vanA, and/or ermC genes, there was a sharp increase in the resistance rate against penicillin and oxacillin, vancomycin and erythromycin respectively with the OR>1 for each of them. However, this statistical association wasn't noticed in any of S. aureus isolated from raw sheep's milk as the P-values was always >0.05.

Biography

Shimaa T. Omara working at National Research Centre, Egypt and she belongs to Department of Microbiology and Immunology.