Molecular typing of methicillin resistant *Staphylococcus aureus* (MRSA) isolated from milk and dairy products in southern Italy

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Methicillin resistant *Staphylococcus aureus* (MRSA) is a significant and costly public health concern because it may enter the human food chain and contaminate milk and dairy products causing foodborne illness. The purpose of this study was to determine the occurrence and the characteristics (SCCmec-, spa-, multi locus sequence typing) of MRSA isolated from dairy food, with respect to the genes encoding Panton Valentine leukocidin (PVL) and ability to form biofilm. Nine (7.5%) MRSA strains were isolated from 120 samples of milk and dairy products produced in Apulia region (south Italy) from January to June 2017. Three different spa-types and STs were identified: the most frequently recovered spa-type and ST was t355-ST152 (55.6%), followed by t899-ST398 (22.2%) and t127-ST1 (22.2%). All isolates harbored the SCCmec type V (66.7%) or IVa (22.3%) and in one isolate (11.1%), ST398/t899, the SCCmec result was not detected. MRSA isolates with genotype t355/ST152/SCCmec type V were PVL-positive, whereas t899/ST398/SCCmec type V and t127/ST1/SCCmec type IVa MRSA isolates were PVL-negative. All MRSA isolates were low grade biofilm positive using a semi-quantitative adherence assay by microtiter plate (MTP). The most common MRSA strain (t355-ST152) is a CA-MRSA clone associated to human infections, and reported in many countries, including Italy. MRSA ST 398 (t899) is considered an important livestock-associated lineage associated to several cases of infections of variable clinical relevance. MRSA t127-ST1 can cause bovine mastitis and is associated with pig carriage in Italy and other European countries. The detection of MRSA in food of animal origin is a potential health hazard related to some factors such as the number of colonizer/infected food handlers, the level of hygiene in food plants and transport systems, and the level of raw milk contamination; thus it is necessary monitoring food-producing animals and improving hygiene in food practices in order to reduce the microbiological risk to minimum.

Recent Publications


Biography

Giovanna La Salandra, Head of Scientific Research and Development of IZS PB, has her expertise in molecular microbiology applied in the field of food safety. She is Manager of many scientific projects in the field of food safety, funded by Italian Ministry of Health. She has published many papers in peer reviewed scientific journals as author and co-author. She has participated in national and international congress/conferences focused on food safety and hygiene food control.

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