Study of Toxic Profile of *Staphylococcus aureus* Isolated From Raw Milk Samples and Food Products in in Oran Area, Algeria.

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Abstract (300 word limit)

The many virulence factors in *S. aureus* such as toxins and proteins or surface polysaccharides are involved in the pathology. The current study aimed to characterize *Staphylococcus aureus* isolates from milk and food products. A total of 223 *S. aureus* isolates from various raw and processed foods were obtained and identified using matrix-assisted laser desorption and ionization time-of-flight mass spectrometry. Isolates were characterized by antimicrobial susceptibility testing and toxin gene detection. Methicillin-resistant *Staphylococcus aureus* (MRSA) isolates were identified by detection of the mecA gene and characterized by staphylococcal cassette chromosome mec (SCCmec) typing. We found that 30.9% (153/495) of food samples were contaminated with *S. aureus*.Thirty three (21.5%) *S. aureus* isolates were identified as MRSA, and 16.9% (26/153) carried the mecA gene. Three SCCmec types were identified of which type IV was the most common (69.2%) followed by type V (15.3%) and type II (7.6%). Furthermore, 14.3% (22/153) of the isolates were toxigenic S. aureus. The cytotoxin gene pvl was detected in 11.1% of the S. aureus isolates. This gene was more commonly detected (76.4%) in MRSA isolates than in methicillin-suceptible *Staphylococcus aureus* (MSSA) isolates. According to disk diffusion test results, 70 isolates were resistant to only one antimicrobial drug, and 51 (33.3%) isolates were multidrug resistant. Other 32 isolates were susceptible to all antibiotics. Toxins research shows that only a few strains have proven carriers of different virulence genes including the gene encoding the *pvl* Panton-Valentine leukocidin. Other strains were positive for the presence of tst gene encoding the toxin of toxic shock syndrome (TSST-1), 100% of the *Staphylococcus aureus* isolates identified were sensitive to methicillin.

Keywords: milk, mastitis, *Staphylococcus aureus*, MRSA, SCCmec, virulence genes, *pvl, TSST-1, sea ;* foodstuffs, Algeria

Recent Publications (minimum 5)

Boulal Ahmed, Mebrouk Kihal, Cherif Khelifi (2017). Fermentative Strength of Yeasts Strain, Naturally Isolated Using Common Date in South-West of Algeria. International Journal of ChemTech Research. 10 (1) : 180-88.(www.sphinxsai.com

Wafaa Chaalal, Nadia Chaalal, Nadjette Bourafa, Mebrouk Kihal, Seydina M. Diene, and Jean-Marc Rolain (2018) Characterization of *Staphylococcus aureus* Isolated from Food Products in Western Algeria. *Foodborne Pathogens And Disease*. 20.20 : 1-8 DOI: 10.1089/fpd.2017.2339

Anis Bertella, Kheira Benlahcen, Sidaoui Abouamama, Diana C.G.A. Pinto, Mebrouk Kihal, Artur M.S. Silva.(2018), Artemisia herba-alba Asso. essential oil antibacterial activity and acute toxicity. Industrial Crops & Products 116 (2018) 137–143 https://doi.org/10.1016/j.indcrop.2018.02.064.

Zarour Kenza, Prieto Alicia, Pérez-Ramos Adrián, Kihal Mebrouk, López Paloma, (2018). Analysis of technological and probiotic properties of Algerian *L. mesenteroides* strains isolated from dairy and non-dairy products. *Journal of Functional Foods* 49 : 351–361 (https://doi.org/10.1016/j.jff.2018.09.001)

Senouci Djamal Eddine*, Saidi Yasmine, Ghazi Fatima, Zergui Amina, Guessas Battache and Kihal Mebrouk . 2018. Antifungal and antibacterial activity of some lactobacilli isolated from camel's milk biotope in the south of algeria. Journal of Microbiology Biotechnlogy and food sciences (accepté)



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Notes/Comments: