Abstract

Background:

Staphylococcus aureus is responsible for many infections in humans and animals from skin and soft tissue infectionsto life-threatening diseases. In this study to explore the origin of S. aureus infections in humans, the antibiotic resistance profile andthe variety of virulence factors in S. aureus isolates were examined in three groups: a healthy human population, cheese, and the milk of sheep with mastitis. Aims: The examination of some virulence factors in S. aureus isolates obtained from th e healthy human population, sheep mastitis, and cheese. Methods: A total of 400 nasal swab samples from healthy students, 30 cheese samples, and 122 sheep milk samples were collected for the detection of S. aureus isolates from January 1, 2018, to March 1, 2018. The frequency of hla, hlb, Acme/arcA, pvl, and tsst-1 virulence genes and mecA gene was determined in each group by PCR assay. Results: There was a direct relationship between the antibiotic susceptibility profile of the isolates from a healthy popu lation and those from mastitis milk samples. Of 400 nasal samples, 15% (60/400) were positive for S. aureus, of which 60% (36/60) were positive for mecA. While 50% (15/30) of cheese samples were positive for S. aureus. of which 7 cases (46.66%, 7/15) were positive for mecA. The prevalence of S. aureus among students was dependent on gender (P=0.025). Also, 47.5% (58/122) of milk samples from sheep mastitis were positive for S. aureus, and 41.37% (24/58) were positive for the mecA gene. Based on PCR results, the highest rate of hla (68.33%, 41/60), hlb (53.33%, 32/60), and Acme/arcA (46.66%, 28/60) genes were related to a healthy population, and the highest frequency of pvl (41.38%, 24/58), and tsst-1 (27.59%, 16/58) was related to milk samples (P<0.05). A significant correlation was observed

between the presence of the arginine catabolic mobile element (ACME)-arcA gene and resistance to methicillin (P<0.05).

Conclusion:

The high rate of virulence factors in the S. aureus isolates obtained from mastitis and da iry products is an alert point, because they could be source of the spreading of S. aureus to humans. There is an essential need for continuous monitoring to control staphylococcal food poisoning.

Key words: Dairy products, Healthy population, Mastitis, S. aureus, Virulence factors