

Quantification of some milk and meat local products for the presence of coagulase positive *Staphylococcus aureus*



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Background

Staphylococcal intoxications are considered as most frequent intoxications and are associated with the ingestion of the Staphylococcal toxins (Suzuki et al, 2014). Initial contamination, poor handling of food along the processing chain might cross contaminate food products and further the improper storage might promote the building of Staphylococcal toxins (Krakauer and Gilles, 2013). Food poisoning with Staphylococcus toxins is common disease and real incidence is probably underestimated and sometimes associated with misdiagnosis, unreported minor outbreaks, improper sample collection and improper laboratory examination techniques (Argudin et al, 2010). *S. aureus* (*Staphylococcus aureus*) can be killed through heat treatment but the toxin is very heat resistant. Local practices to produce food may vary in different parts of the world by producing different traditional food which is locally produced and produced out of the food safety standards. The incidence of gastrointestinal infections- and intoxications in Kosovo is very high primarily during the summer months and might be in association with food produced in poor safety production systems. This study gives some of the preliminary results on quantification of some local milk and meat products for the presence of coagulase positive *S. aureus*.

Material and Methods

In this study 212 samples consisting of milk and meat products such as paprika in cream, soft-cheese, gjiza (ricotta-like product), homemade ready to eat sausage and salçiçe (fresh made sausage) were taken out from the local food supermarkets in different cities throughout Kosovo as to have a better representation of the isolates. Storage temperature, conditions of keeping (open, closed), marketing (packing) as well as declaration was recorded. Isolation, identification and enumeration was performed using ISO 6888-1 followed by coagulase test. After laboratory analysis all the isolates were transferred in to cryotubes.



Fig. 1 and 2- Gjiza (Ricotta like product)



Fig. 3 Traditional White cheese



Fig. 4- Paprika in creme



Fig. 5 Homemade sausage



Fig. 6 Salçiçe

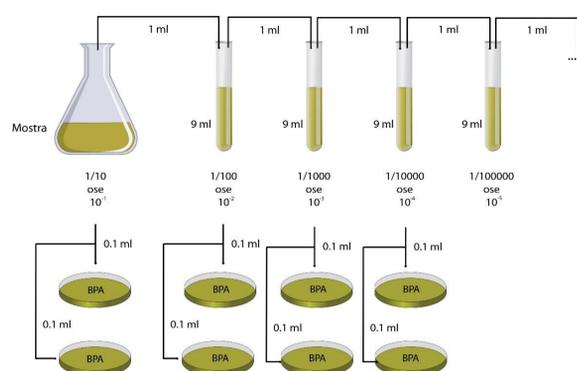


Fig. 7 Sample dilution and streaking

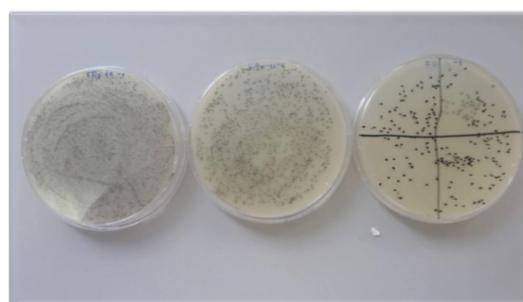


Fig. 8 *S. aureus* colonies in Baird Parker Agar



Fig. 9 Coagulase test of *S aureus*

Results

In this study in general high contamination rate with *S. aureus* were found with 76 positive samples and ranging from 10^2 to uncountable numbers. 6 samples resulted coagulase positive out of 39 paprika in crème samples, 5 samples out of 37 tested gjiza samples, 16 samples out of 39 soft cheese samples, 9 samples out of 40 homemade sausage samples and 8 samples out of total 57 salçiçe samples, respectively.

Discussion

In this study very high contamination rate with *S. aureus* was found for both milk and meat products exceeding the limits set by the national microbiological criteria in processed foods, as criteria for such milk and meat products containing plant products, in case of paprika in cream and homemade sausage, which contain high amounts of onion and non meat extenders, are not given. Despite the fact of prior pasteurization of the analyzed products, in this study with exception of salçiçe being a fresh meat product, high contamination rates were found with 22 samples being uncountable at the dilution 10^{-6} , which shows a high risk for toxin production. Further, the isolates will be tested for the AMR as to compare with isolates from a previous study with isolates from farms and mastitis.

Conclusions

This study shows that such products must be subject of control and prior trainings in GHP and GMP along the production chain are needed to avoid the intoxications through consumption of traditional milk and meat products. Microbiological criterias for such products have to be discussed and set.