

Rapid DNA extraction of bacterial genome of *Staphylococcus aureus* using laundry detergents and assessment of the efficiency of DNA in downstream process using PCR

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Abstract

Background and objectives: Genomic DNA extraction of bacterial cells is of processes performed normally in most biological laboratories; therefore, various methods have been offered, manually and kit, which may be time consuming and costly. In this paper, genomic DNA extraction of *Staphylococcus aureus* was investigated using some laundry detergent brands available in Iran to achieve a rapid and cost effective method.

Material and Methods: five-enzyme Taj brand, three-enzyme Saftlan brand, and Darya and Pak brands without enzyme were used in the concentrations of 10, 20, 40, 80 mg/L. Afterwards, in order to evaluate the efficiency of extracted DNA in downstream processing, PCR test was performed for femA gene in the genome of *Staphylococcus aureus*.

Results: DNA extraction using different concentrations of the brands show that extracted DNA using 40 mg/L Saftlan and Taj brand powders have the best results according concentration ($\mu\text{g/ml}$) and purity (A260/A280) parameters. These parameters are 387.5; 1.88 (Taj), 254.1; 2.80 (Softlan), 396.6; 1.95 (Manual) and 423.3; 2.2 (Kit), respectively. Afterward, the PCR test results by show that DNA extraction using laundry detergents has no effect on its efficiency in order to be used in downstream processes.

Conclusion: These results indicate that the proper concentrations of laundry detergents can be used to extract genomic DNA with similar efficiency to kit and manual extraction methods.

Key words: Bacterial genome, DNA extraction, laundry powder, PCR, *Staphylococcus aureus*