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

**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 (µg/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