

## **Effect of laundry detergent on qualities and quantities of extracted deoxyribonucleic acid using the DIY method**

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### **Structured Abstract**

**Background:** The Do-It-Yourself (DIY) DNA Extraction Method is a simple, at-home procedure for obtaining DNA from a variety of living things. Detergents, such as sodium dodecyl sulphate (SDS) or sodium lauryl sulphate (EDTA), play a crucial role in this process. This study aims to investigate the impact of liquid laundry detergents on DNA quality and quantity using a DIY method. Despite the proven effectiveness of simple DIY methods for DNA extraction using various detergents, there remains a lack of adequate research on how different types of liquid laundry detergents may impact the quality and quantity of DNA extraction.

**Methods:** Different brands of liquid laundry detergent were used as independent variables including TOP, Daia, Dynamo and Amoris (control). DNA purity and DNA concentration were measured using a spectrophotometer. The DNA was then electrophoresed on 0.8% (w/v) agarose gel to visualise the genomic DNA band.

**Results:** TOP showed the highest amount of white DNA clumps compared to Dynamo, Daia, and Amoris, indicating the presence of DNA. All liquid detergents used in this study led to impure DNA samples, with an A260/A280 absorbance ratio below 1.8, indicating protein contamination. DNA bands observed during gel electrophoresis were smeared between 1500 bp and 1000 bp, indicating DNA degradation during the process.

**Conclusion:** The types of liquid laundry detergent used during DNA extraction significantly impacted the quality and quantity of the extracted DNA. TOP proved to be the most effective in producing greater DNA yield and high-quality DNA with minimal degradation. Since only high-quality DNA may be used for future research, this straightforward experiment will interest children in learning more about DNA, enzymes, or other scientific issues that conduct in school as an educational purpose and is environmentally beneficial.

**Keywords:** DIY DNA Extraction, Laundry Detergent, Spectrophotometer, Electrophoresis, SDS

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