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The Development of a Do-It-Yourself (DIY) DNA Extraction Method - The Effect of Different Sources of Fruit Enzymes on The Extracted DNA Quality

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Structured Abstract

Background: The Do-It-Yourself (DIY) DNA Extraction Method is the extraction of DNA from various living organisms using readily materials at home. This study focuses on protease enzymes in different fruits to degrade waste proteins that might contaminate the extracted DNA. Limited studies have explored potential fruits that may serve as suitable enzyme sources essential for degrading proteins in DIY DNA extraction processes.

Methods: In this study, the strawberry was extracted using the DIY DNA extraction method developed by the University of Utah. The modification incorporated fruit enzymes from pineapple, papaya, and kiwifruit as alternative protease enzyme sources. Following DNA extraction, the extracted DNA's purity and concentration were measured using a spectrophotometer. The integrity of the DNA bands was then examined using agarose gel electrophoresis and visualized under ultraviolet light.

Results: Pineapple enzymes produce the greatest quantity of white clumps followed by papaya and kiwifruit. The presence of a high-intensity band on agarose gel confirmed the presence of DNA. However, the appearance of fragmented DNA ranging from 1500bp to 1000bp indicates degradation. All the extracted DNA has a DNA purity of below 1.8 suggesting protein contamination. The highest concentration of DNA are from papaya enzymes.

Conclusion: Pineapple, papaya, and kiwifruit are suitable to be used as enzymes for the DIY extraction method. However, further research needs to be conducted to reduce the contamination.

Keywords: DIY DNA extraction, protease enzyme sources, DNA quality and quantity

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