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A simplified universal genomic DNA extraction protocol suitable for PCR

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ABSTRACT. Conventional genomic DNA extraction protocols need expensive and hazardous reagents for decontamination of phenolic compounds from the extracts and are only suited for certain types of tissue. We developed a simple, time-saving and cost-efficient method for genomic DNA extraction from various types of organisms, using relatively innocuous reagents. The protocol employs a single purification step to remove contaminating compounds, using a silica column and a non-hazardous buffer, and a chaotropic-detergent lysing solution that hydrolyzes RNA and allows the selective precipitation of DNA from cell lysates. We used this system to extract genomic DNA from different tissues of various organisms, including algae (*Dunaliella salina*), human peripheral blood, mouse liver, *Escherichia coli*, and Chinese hamster ovary cells. Mean DNA yields were 20-30 μg/cm^3 from fresh tissues (comparable to yields given by commercial extraction kits), and the 260/280 nm absorbance ratio was 1.8-2.0, demonstrating a good degree of purity. The extracted DNA was successfully used in PCR, restriction enzyme digestion and for recombinant selection studies.

Key words: DNA extraction; PCR; Protocol

