

Analysis Of DNA Yield and Quality from Saliva and Buccal Swab Samples Using the Invisorb Spin Tissue Mini Kit

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Structured Abstract

Background: High-quality DNA extraction is important for the success of molecular applications such as PCR and sequencing. Non-invasive biological samples like buccal swabs and saliva offer convenient alternative to blood, but inconsistencies in sampling techniques can lead to inconsistent DNA yield and purity. Moreover, the performance of the Invisorb® Spin Tissue Mini Kit for these sample types has not been thoroughly evaluated, particularly in comparisons. This study aims to assess and compare the DNA yield and purity from buccal and saliva samples collected using different approaches, including single and double buccal swabs, single and double saliva swabs, and the spit-out saliva method.

Methods: Saliva and buccal samples were collected from a single individual to minimize biological variation and ensure standardization. Collection technique included single and double buccal swabs, single and double saliva swabs, and the spit-out saliva. DNA was extracted using the Invisorb® Spin Tissue Mini Kit. DNA concentration and purity were measured using the Eppendorf BioPhotometer with A260/A280 ratios indication DNA quality. Statistical analysis including t-tests and ANOVA were performed to determine significant differences between methods.

Results: Among all collection techniques, the buccal single swab method yielded the highest DNA concentration (225.88 ± 80.82 ng/ μ L) with an acceptable purity level (A260/A280 ratio: 1.21 ± 0.39), outperforming other techniques. Saliva samples, particularly those collected using the spit-out method, produced lower yields and lower purity value. Although differences among saliva collection methods were not statistically significant ($p > 0.05$), the single swab consistently outperformed both double swab and spit techniques.

Conclusion: This study demonstrates that the single buccal swab method is the most effective and consistent non-invasive approach for DNA collection when using the Invisorb® Spin Tissue Mini Kit. It provides sufficient DNA yield and acceptable purity for downstream molecular applications. This finding supports the use of optimized buccal swab techniques in genetic studies and diagnostic workflows.

Keywords: DNA extraction, Buccal swab, Saliva, Invisorb Spin Tissue Mini Kit, Non-invasive sampling

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