

Stability of DNA from saliva samples stored in go DNA™ saliva collection kits

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Shipping and storing saliva samples for qualitative and quantitative analysis of DNA can add substantial costs to a research project. Saliva samples collected with go DNA collection kits can be stored for months at ambient temperature while preventing DNA degradation, therefore go DNA saliva collection kits overcome these cost challenges by reducing cold-chain transportation and storage requirements. The objective of this study was to demonstrate that saliva samples stored at ambient temperature in go DNA collection kits for 60 days post-collection maintain high molecular weight DNA.

Introduction

go DNA collection kits enable painless, non-invasive and convenient saliva collection from patients and study subjects, providing an ideal source of high molecular weight genomic DNA. Additionally, saliva collected using go DNA collection kits is stable at ambient temperature, removing the need for refrigeration or freezing and simplifying sample transportation and storage.

In this white paper, we demonstrate that go DNA collection kits prevent the degradation of DNA in saliva when samples are stored at ambient temperature for 60 days post-collection.

Materials and methods

Saliva samples were collected from 29 participants using go DNA collection kits. Participants provided 2 mL of saliva in the go DNA collection kits, following the instructions for use. The collected saliva samples were stored at ambient temperature for 60 days.

Purification of genomic DNA was carried out according to the prepIT™•L2P purification protocol for go DNA collection kits,¹ using a 500 µL input volume for all samples at one day post-collection and again at

60 days post-collection. DNA concentration was measured by Quant-iT™ PicoGreen™ dsDNA assay, using 5 µL of a 50-fold dilution of each sample, and the total DNA yield per 2 mL of saliva was calculated. Approximately 50 ng of DNA from each sample was run on a 0.8% agarose gel, which was then stained using SYBR™ Gold Nucleic Acid Gel Stain and photographed under UV light. The molecular weight of the extracted DNA was approximated by comparison a 1 kb DNA ladder.

Results

The total DNA yield for saliva samples extracted one day post-collection and 60 days post-collection from 29 participants is shown in Figure 1. Samples extracted one day post-collection had a mean total DNA yield of 50.9 µg and a median total DNA yield of 40.6 µg. Samples extracted 60 days post-collection had a mean total DNA yield of 57.8 µg and a median total DNA yield of 52.1 µg (Figure 1).

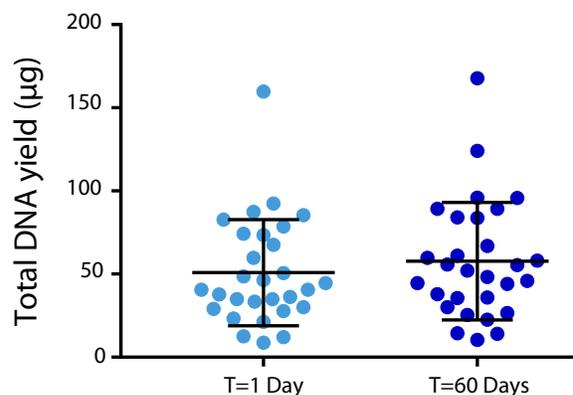


Figure 1. Total DNA yield in 29 paired saliva samples. The horizontal line represents the mean value and the error bars represent \pm standard deviation. go DNA T = 1 (mean: 50.9 µg, median: 40.6 µg), go DNA T = 60 (mean: 57.8 µg, median: 52.1 µg).

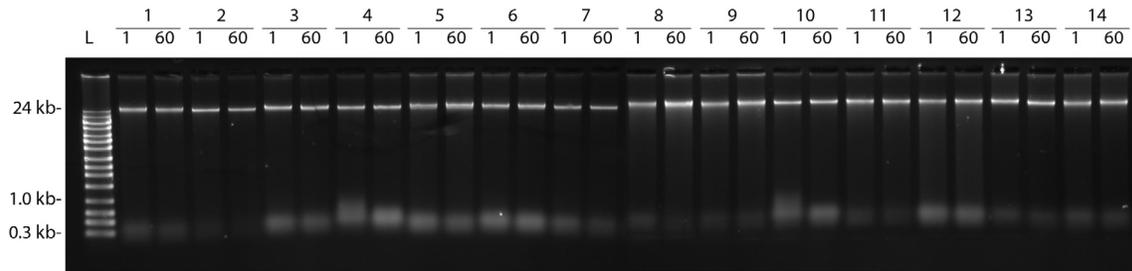


Figure 2. Agarose gel electrophoresis of DNA extracted from 14 representative saliva samples stored at ambient temperature, comparing sample aliquots extracted one day post-collection (1) and 60 days post-collection (60). A 1 kb DNA Ladder, which contains 15 discrete fragments ranging from 300 bp to 24,000 bp, was used as the marker in lane 1 (L). No RNase treatment was performed; co-purified RNA is visible in lower bands.

DNA integrity of the samples collected with go DNA collection kits and extracted one day post-collection and 60 days post-collection was assessed using agarose gel electrophoresis. All samples produced a well-defined, high molecular weight (> 23 kb) band, demonstrating DNA integrity. There was no difference in molecular weight of the DNA extracted at 60 days compared to that extracted one day post-collection (Figure 2).

Conclusions

DNA extracted from saliva samples collected using go DNA collection kits demonstrated sample stability for 60 days post-collection when stored at ambient temperature. Ambient temperature sample stability, together with the ease of sample collection and elimination of cold storage, makes go DNA collection kits a preferred saliva collection kit for any genomic study.

Reference

- ¹ Laboratory protocol for manual purification of DNA from 0.5 mL of go DNA sample. PD-PR-00914. DNA Genotek Inc.

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