# ApplicationForum

## Sample Collection / Preservation and DNA Isolation from stool samples for MICROBIOME analysis

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## Introduction

Appropriate preservation and storage of stool samples is crucial to maintain DNA integrity and microbial community composition for downstream applications and analysis, including NGS and microbiome characterization.

The ultimate goal of a microbiome analysis is to reveal the real composition of a microbial community. To achieve an accurate representation of the original sample, collection/storage and isolation methods need to prevent the alteration of the nucleic acids profile to avoid inaccuracies and biases.

DANAGEN-BIOTED has developed two products to overcome these challenging tasks:

**a) DANASTOOL Sample Collection MICROBIOME Kit** enables collection, storage and stabilization of stool samples. It comes in a tube with a spoon and liquid preservative solution that preserves the microbiome composition.

**b) DANAGENE MICROBIOME Fecal DNA Kit** designed for fast and easy purification of DNA from preserved stool samples using an optimized lysis method.

## Materials and Methods

### Sample Collection

0.5–1.0 gr of human stool samples were collected using DANASTOOL Sample Collection MICROBIOME Kit and stored at room temperature for two months.

### Microbial DNA Isolation

Preserved stool samples were obtained at the indicated time points (Figure 1) and processed following the DANAGENE MICROBIOME Fecal DNA kit protocol.

To determine if our DNA extraction method is biased or not, we have used a mock microbial community containing known quantities of different microbes.

### Targeted Library Preparations, Sequencing and Bioinformatics Analysis

The samples were processed and analysed with the ZymoBIOMICS Service:Targeted Metagenomic Sequencing (Zymo Research, Irvine,CA).

## Results

Microbial composition of stool samples preserved at room temperature is unchanged after 15 days and with minimum changes after two months stored in DANASTOOL preservative solution. Samples had a constant microbial composition (Figure 1).

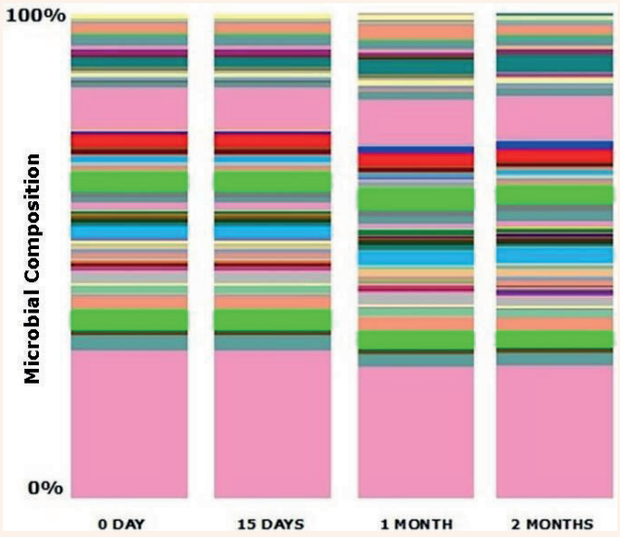


**Figure 1. Stool Samples with DANASTOOL preservative solution-Species.**

## Conclusions

The DANASTOOL preservative solution preserves microbiota profiles for unbiased and reproducible results and eliminates sample variability.

Furthermore, the preservative solution and our DNA isolation method maintain DNA integrity.

In this paper we demonstrate that DANASTOOL Sample Collection MICROBIOME Kit preserves DNA profile of microbial samples stored at room temperature for one or two months, making it ideal for the transportation of stool samples for MICRIOBIOME Analysis.